EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N. Long. 6° 15′ W., for the Month of January, 1893.

Mean Height of Barometer,	30·053 inches.
Maximal Height of Barometer (on 21st, at 7 30 a.m.),	30·559 ,,
Minimal Height of Barometer (on 28th, at 9 p.m.),	29·178 ,,
Mean Dry-bulb Temperature,	40·1°.
Mean Wet-bulb Temperature,	38·4°.
Mean Dew-point Temperature,	35·7°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·214 inch.
Mean Humidity,	85·1 per cent.
Highest Temperature in Shade (on 30th),	54·9°.
Lowest Temperature in Shade (on 3rd),	20·2°.
Lowest Temperature on Grass (Radiation) (on 3rd),	14·4°.
Mean Amount of Cloud,	70·2 per cent.
Rainfall (on 19 days),	2·239 inches.
Greatest Daily Rainfall (on 31st),	·513 inch.
General Directions of Wind,	W., N.W.

Remarks.

The promise of a cold month offered by very severe weather during the first ten days or a fortnight was not fulfilled. So decided was the recovery of temperature after the 15th, that the mean temperature of the whole month scarcely fell below the average. The mean temperature of the 1st–14th, inclusive, was 36·0°; that of the 15th–28th, inclusive, was 44·3°. Ireland escaped to a remarkable extent the Siberian cold, which prevailed on the Continent of Europe and to a less degree in Great Britain throughout a large portion of the month. In Dublin the cloudiness of the sky was one of the chief features of the weather, Another interesting point was the singular mildness, which the northerly and north-westerly winds of an Atlantic anticyclone brought to Ireland in the period between the 15th and the 25th.

In Dublin the arithmetical mean temperature (40·8°) was slightly below the average (41·4°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 40·1°. In the twenty-eight years ending with 1892, January was coldest in 1881 (M. T. = 32·2°), and warmest in 1875 (M. T. = 46·6°). In 1867 the M. T. was 35·7°, and in 1865 it was 37·8°. In 1871 and in 1886 the M. T. was 37·9°; in 1879 (the "cold year") it was 35·3°. In 1888 the M.T. was 42·1°; in 1889, 42·4°; in 1890, 44·5°; in 1891, 40·1°; and in 1892, 38·7°. As a general rule, January in Dublin is not colder, but a shade warmer, than December. This is owing to the full development in January of a winter area of low pressure over the Atlantic, to the northwestward of the British Isles, and to a resulting prevalence of S.W. winds in their vicinity. January, 1892, proved an exception to this rule, the M.T. being 4·3° below that of December, 1891 (43·0°). But January, 1893, conformed to the rule, the M. T. being above that of December, 1892.

The mean height of the barometer was 30·053 inches, or 0·179 inch above the corrected average value for January—namely, 29·874 inches. The mercury rose to 30·559 inches at 7 30 a.m. of the 21st, and fell to 29·178 inches at 9 p.m. of the 28th. The observed range of atmospherical pressure was, therefore, as much as 1·381 inches—that is, a little less than one inch and four-tenths.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 41·1°, or 2·2 above the value for December, 1892. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·52), the M. T. becomes 41·0°, compared with a twenty-five years, average of 41·5°. The arithmetical mean of the maximal and minimal readings was 40·8°, compared with a twenty-five years' average of 41·4°. On the 30th the thermometer in the screen rose to 54·9°—wind, W.S.W.; on the 3rd the temperature fell to 20·2°—wind, W.N.W. The minimum on the grass was 14·4°, also on the 3rd.

The rainfall was 2·239 inches, distributed over 19 days. The average rainfall for January in the twenty-five years, 1865–89, inclusive, was 2·200 inches, and the average number of rainy days was 17·3. The rainfall, therefore, was very slightly above the average, while the number of rainy days was more decidedly above it. In 1877 the rainfall in January was very large—4·322 inches on 25 days; in 1869, also, 4·258 inches fell—on, however, only 18 days. On the other hand, in 1876, only ·406 of an inch was measured on but 9 days; and in 1880 the rainfall was only ·563 of an inch on but 8 days. In January, 1886, only 3·244 inches of rain were measured on as many as 26 days; in 1887 (the "dry year"), 1·816 inches fell on 16 days; in 1888, 1·247 inches on 9 days; in 1889, 2·213 inches on 16 days; in 1890, 2·975 inches on 21 days; in 1891, only ·672 of an inch on 14 days; and in 1892 1·698 inches on 20 days.

Solar halos were seen on the 15th and 25th. A lunar halo was seen on the 28th. The atmosphere was foggy on the 2nd, 4th, 12th, and 29th. High winds were noted on not less than 18 days, reaching the force of a gale, however, on only 4 days—the 7th, 8th, 16th, and 28th. Hail fell on the 3rd, 7th, 14th, and 31st, and snow or sleet on the 1st, 2nd, and 14th. Temperature exceeded 50° in the screen on 7 days, compared with 6 days in 1892, only 5 days in 1891, 17 days in 1890, and 8 days in 1889; while it fell to or below 32° in the screen on only 4 nights, compared with 15 nights in 1892, 7 nights in 1891, 1 night in 1890, and 3 nights in 1889. The minima on the grass were 32°, or less, on 16 nights, compared with 25 nights in 1892, 21 nights in 1891, 15 nights in 1890, and 16 nights in 1889.

The first week of 1893 will long be remembered for the intensity of the cold which prevailed in both Northern Hemispheres, and for the remarkable height reached by the barometer in Northern and Eastern Europe—31·25 inches at Archangel on Tuesday, the 3rd, 31·12 inches at Haparanda, on the Gulf of Bothnia, on Wednesday, and 31·27 inches at Moscow on Thursday. At 8 a.m. of Sunday, the 1st, the thermometer stood at *minus* 37° Fahr. at Haparanda, or 69° below freezing point. During the ensuing night the minimal reading at this station was —40°, or 72° of frost. At the beginning of the month a vast anticyclone stretched from the extreme North of Europe to the westward of the British Islands. Strong S.E. winds blew in Ireland, and on Monday morning a fall of snow occurred in Dublin. This was followed by severe frost, the thermometer falling to 20·2° in the screen, and to 14·4° on the ground during Monday night, even in the heart of the city. On Wednesday, the 4th, a decided change of weather set in over Ireland, where the sky became densely overcast, with freshening S.E. winds and rising temperature. In Great Britain at this time the frost only "stiffened," and fog prevailed. By the end of the week, however, strong S.E. or E. winds, with falls of cold rain and sleet or snow had become general, and the weather was most inclement in all parts. In Dublin the mean height of the barometer was 30·110 inches, pressure ranging from 30·369 inches, at 9 a.m. of Wednesday (wind, calm), to 29·763 inches at 9 p.m. of Saturday (wind, E., blowing a moderate gale). The corrected mean temperature was 33·2°. The mean dry bulb readings at 9 a.m and 9 p.m. were 32·5°. The screened thermometers rose to 38·9° on Friday, having fallen to 20·2° on Tuesday. The rainfall amounted to ·624 inch on five days, ·372 inch being registered on Saturday. The precipitation consisted largely of snow or sleet and hail. The prevalent wind was S.E. A noteworthy feature was the relatively high temperature which accompanied this wind in the south-western parts of England and Ireland, and in Brittany.

Although the cold in Ireland and in Great Britain also was much less intense during the week ended Saturday, the 14th, than in the two previous weeks, the record is again one of winterly weather. At the beginning of the period a large area of low atmospherical pressure was found over the Atlantic southwestward of the British Isles. Strong E. and S.E. winds or gales were blowing in Ireland, where also cold rain or sleet fell heavily. During the next two days the depression made its way across the Bay of Biscay and France to Germany, bringing with it to those countries higher temperatures and a thaw. Meanwhile an area of high pressure formed in the far North, causing easterly to northerly winds, and cloudy, cold weather generally. This system subsequently retreated in a south-westerly direction, and disappeared off the S.W. of Ireland on Friday, when a series of depressions was preparing to travel southwards across the British Isles and North Sea. In front of these disturbances a transitory rise of temperature took place on Friday, and rain fell at night. On Saturday, however, rain gave place to frequent showers of sleet, snow, and hail, as the wind veered to N. and N.E. in the rear of the depressions, which continued their southerly course. In Dublin the mean height of the barometer was 30·090 inches, pressure ranging from 29·616 inches, at 2 p.m. of Sunday (wind, E.), to 30·440 inches, at 9 a.m. of Wednesday (wind, E.N.E.). From this high reading it receded to 29·764 inches, at 9 a.m. of Saturday (wind, W.N.W.). The corrected mean temperature was 38·8°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 38·3°. On Friday the screened thermometers rose to 44·4°; on Saturday they fell to 33·0°. The rainfall was ·368 inch on four days, ·228 inch being measured on Sunday. The prevailing winds were—first easterly, then north-westerly.

The most marked characteristic feature in the weather of the week ended Saturday, the 21st, was a decided advance in temperature all over the British Islands, but especially in Ireland, Scotland, and the West of England (including Wales). In France and Germany, on the contrary, the cold "stiffened" daily until Friday, when warmer weather spread in from the Atlantic over the Continent also. A very interesting circumstance is that the milder weather came with N.W. and N. winds, which formed part of the circulation round an anticyclone found generally over the Atlantic to the westward or south-westward of Ireland. On Tuesday morning also a *southerly* wind carried cold weather from the frozen Continent to the S.E. of England, where the thermometer remained all day below the freezing point. Not for many years has such extreme cold been felt in Germany and France as during the greater part of this week—at Munich the minima have been — 11°, —15°, — 14°, —8°, —8°, +1°, and +19°; at Lyons the corresponding values have been + 11°, —3°, —1° (?), 0°, + 3°, + 4° (?), and + 17°. During all this time temperatures as high as from 48° to 52° were being recorded on the Atlantic coasts of both the United Kingdom and France. In the interval between Wednesday and Friday a vast depression crossed the extreme northern parts of Scandinavia, bringing with it a thaw even to those high latitudes at a time when intense frost held as far south as Lyons and Munich. On Saturday cold weather was re-established in Scotland and Scandinavia. In Dublin the mean height of the barometer was 30·286 inches, pressure ranging from 29·816 inches at 2 p.m. of Monday (wind, N.W.) to 30·559 inches at 7 30 a.m. of Saturday (wind, W.N.W.) The corrected mean temperature was 42·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 42·4°. On Sunday the thermometers in the screen fell to 29·5°; on Thursday they rose to 50·8°. Rain was measured on four days to the amount of ·341 inch, of which ·277 inch fell on Sunday. The prevailing winds were W.N.W. and W.

A further advance in temperature occurred during the week ended Saturday, the 28th, which proved open, changeable, and breezy, with prevalent westerly to southerly winds. At first an anticyclone lay to the southward of Ireland—on the morning of Sunday, the 22nd, the barometer stood as high as 30·60 inches at Corunna, in the N.W. of Spain—while several shallow depressions were found over the North Sea, Germany, and the Baltic. The winds curved from S.W. in the west of Ireland, through W. in the east of this country to N.W in the S.E. of England, and to N. in parts of France. The weather was mild and damp, and light rain fell at many stations. On Wednesday morning a depression appeared off the south of Ireland, ultimately forming portion of a complex V-shaped depression, which caused southerly gales and in places heavy rains during the ensuing 24 hours. As this disturbance passed off to the northward a sharp but temporary dip in temperature took place. On Friday another and more serious depression advanced over Ireland from S.S.W., bringing with it southerly gales, a renewed rainfall, and generally broken weather, which lasted to the close of the week. In Dublin the mean height of the barometer was 29·914 inches, pressure ranging from 30·412 inches, at 9 a.m. of Sunday (wind, W.), to 29·178 inches, at 9 p.m. of Saturday (wind, S.). The corrected mean temperature was 45·7°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 44·4°. On Tuesday the screened thermometers rose to 53·0°; on Friday they fell to 37·4°. The rainfall was ·389 inch on five days, ·124 inch being measured on Friday, and ·240 inch on Saturday. The prevailing winds were W. and S. to S.S.E. A lunar halo was visible at 9 p.m. of Saturday.

Sunday, the 29th, was a fine mild day. The 30th was very mild, but changeable. On the 31st the heaviest rainfall of the month occurred at night, and hail fell in places in the afternoon.

In Dublin, the rainfall up to January 31, 1893, amounted to 2·239 inches on 19 days, compared with a twenty-five years' (1869–1889) average of 2·200 inches on 17·3 days.

At Knockdolian, Greystones, Co. Wicklow, 3·380 inches of rain fell on 18 days. The heaviest falls in 24 hours were ·510 inch on the 7th, and ·575 inch on the 28th.

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N. Long. 6° 15′ W., for the Month of February, 1893.

Mean Height of Barometer,	29·593 inches.
Maximal Height of Barometer (on 4th, at 9 p.m.),	30·218 ,,
Minimal Height of Barometer (on 14th, at 7 30 a.m.),	28·790 ,,
Mean Dry-bulb Temperature,	41·7°.
Mean Wet-bulb Temperature,	39·6°.
Mean Dew-point Temperature,	37·0°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·223 inch.
Mean Humidity,	83·7 per cent.
Highest Temperature in Shade (on 18th),	56·4°.
Lowest Temperature in Shade (on 25th),	26·0°.
Lowest Temperature on Grass (Radiation) (on 28th),	23·0°.
Mean Amount of Cloud,	68·2 per cent.
Rainfall (on 22 days),	2·669 inches.
Greatest Daily Rainfall (on 9th),	·480 inch.
General Directions of Wind,	W., S.W., S.

Remarks.

The month now under review was, like February, 1892, wet, cold, stormy, and cloudy. Rain or snow fell in measurable quantity on 22 out of 28 days, and on 4 days the wind reached the force of a gale in Dublin. On the 9th, 14th, 21st, and 26th, atmospherical depressions with minima much below 29 inches were found crossing the British Islands. On the 21st and 26th the centres passed over the south of England.

In Dublin the mean temperature (42·7°) was 0·1° below the average (42·8°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 41·7°. In the twenty-eight years ending with 1892, February was coldest in 1873 (M. T. = 37·9°), and warmest in 1869 (M. T. = 46·7°). In 1886 the M. T. was 39·7°. In the year 1879 (the "cold year") it was 40·1°. In 1888 it was as low as 38·6°; in 1889 it was 40·3°; in 1890 it was 41·5°; in 1891 it was as high as 44·7°; and in 1892 it was 41·3°.

The mean height of the barometer was 29·593 inches, or 0·262 inch below the average value for February—namely, 29·855 inches, and ·805 inch below the mean pressure in February, 1891. The mercury rose to 30·218 inches at 9 p.m. of the 4th, and fell to 28·790 inches at 7 30 a.m. of the 14th. The observed range of atmospherical pressure was, therefore, 1·428 inches—that is, a little less than an inch and a half.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 41·7°, or 1·6° above the value for January, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·50), the M. T. becomes 42·7°, compared with a twenty-five years' average of 42·8°. On the 18th the thermometer in the screen rose to 56·4°—wind, S.W.; on the 25th the temperature fell to 26·0°—wind, W.S.W. The minimum on the grass was 23·0°, on the 28th.

The rainfall was 2·669 inches, distributed over 22 days. The average rainfall for February in the twenty-five years, 1865–89, inclusive, was 2·150 inches, and the average number of rainy days was 17·2. The rainfall, therefore, was decidedly above the average, while the rainy days were also much above it. In 1883 the rainfall in February was large—3·752 inches on 17 days; in 1879, also, 3·706 inches fell on 23 days. On the other hand, in 1873, only ·925 of an inch was measured on but 8 days; in 1890, only ·802 of an inch fell on but 7 days; and in 1887 only ·541 of an inch fell on 11 days. The rainfall in 1887 was much the smallest recorded in February for very many years. But the record for 1891 is probably unparalleled—·042 inch on 2 days. The nearest approach to this drought was in September, 1865, when only ·056 of an inch of rain was measured on but 3 days. In 1892, the rainfall was 2·119 inches, on 19 days.

There was no snow, sleet, or hail in Dublin in February, 1891, but in the present month snow or sleet fell on 7 days—the 11th, 12th, 22nd, 23rd, 24th, 25th, and 26th; while hail was observed on 6 days—the 7th, 20th, 21st, 22nd, 23rd, and 25th.

The atmosphere was foggy on 3 days—namely, the 26th, 27th, and 28th. The amount of cloud—68·2 per cent.—was in excess of the average—66 per cent. High winds were noted on 11 days, reaching the force of a gale on 4 occasions—namely, the 7th, 9th, 10th, and 14th.

The temperature reached or exceeded 50° in the screen on 13 days, compared with 6 days in 1892, and as many as 14 days in 1891; while it fell to or below 32° in the screen on 5 days, compared with 5 days in 1892, and with 2 days in 1891. The minima on the grass were 32°, or less, on 13 nights, compared with 16 nights in 1892, and 17 nights in 1891. On 3 days the thermometer failed to rise to or above 40° in the screen.

Lightning was seen on the night of the 7th. There was an aurora on the night of the 16th. Solar halos were seen on the 15th and 28th, a lunar halo was seen on the evening of the 28th.

During the first four days of the month, open but changeable and often rainy weather prevailed in the British Islands. At first it was mild also in France and Germany, but intense frost prevailed in the Gulf of Bothnia, whence a high pressure system with its accompanying cold spread southwards and westwards from Northern over Western Europe before the close of the period. On the night of Wednesday, the 1st, thunder and lightning occurred at Belmullet, Co. Mayo, and rain fell heavily at many Irish stations—·440 inch in Dublin and ·480 inch in the Phœnix Park. As the cold spread from the Baltic over Norway in one direction, and to Denmark, Germany and England in another, the weather became finer and drier. In Dublin, the 3rd and 4th were quite spring-like days.

During the week ended Saturday, the 11th, open but blustering, rainy, and generally unsettled weather prevailed in Western Europe. At the beginning, no doubt, it was cold in England, very cold on the continent, owing to the presence of an anticyclone in those parts; but even at that time mild southerly winds swept over Ireland and Scotland, keeping the thermometer well above freezing point. On Sunday night the shade thermometer fell to 26° at Loughborough, 24° in London, and 21° at Cambridge. At 8 a.m. of Tuesday temperature exceeded 40° at all British Stations, and touched 50° at Valentia Island, in Kerry. A series of depressions, each deeper than its predecessor, now began to approach the N.W. of Europe from the Atlantic. They caused S.W. to W. gales of considerable violence, and frequent and sometimes heavy rains. On Tuesday night severe squalls, with thunder and lightning, hail and rain, occurred over Ireland. The most serious disturbance of the week, however, came in on Thursday afternoon. Its centre lay between the N.E. of Scotland and the S.W. of Norway on Friday morning—the barometer falling below 28·70 inches over that portion of the North Sea. Sleet and snow fell in Scotland, hail in Ireland, and thunder and lightning were again reported from several stations. On Saturday a general reduction of temperature took place, and cold rain and sleet fell in the afternoon. Very intense frost prevailed in the Baltic, over Finland and the North of Russia, all through this week—at Haparanda, on the Gulf of Bothnia, the 8 a.m. readings of the thermometer were + 1°, + 3°, −1°, −6°, −35°, −37, and −19° respectively. In Dublin the mean height of the barometer was 29·828 inches, pressure ranging between 30·205 inches at 9 a.m. of Sunday (wind, S.S.E.) and 29·346 inches at 9 p.m. of Thursday (wind, W.). The corrected mean temperature was 46·0°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 44·8°. On Monday and Tuesday the shade thermometer rose to 53·8°, falling on Saturday to 35·9°. The rainfall equalled ·762 inch on six days—·480 inch being measured on Thursday. The prevailing winds were—first, S., then W. Lightning was seen on Tuesday night, and sleet fell on Saturday.

The striking features in the meteorological conditions during the week ended Saturday, the 18th, were—first, the persistence of severe cold in the north of Europe (Scandinavia, Finland, and Northern Russia); second, the very disturbed state of the atmosphere over the North Atlantic to the west and north of the British Islands—four definite barometrical depressions of prime importance having skirted our Atlantic coasts within the period. These cyclonic systems caused, as is usual, very unsettled weather; severe gales were felt at times, rain or hail and sleet fell frequently, and the changes in temperature were sudden, fitful, and large. Sunday was cold and chiefly fine, but some local showers of sleet and hail fell. Monday was mild and changeable. At night a very deep depression approached Ireland, and at 8 a.m. of Tuesday the barometer was down to 28·63 inches at Mullaghmore, near Sligo, and to 28·79 inches even in Dublin. In the course of this day a violent S.E. gale was felt on the east coast of Scotland, while it blew hard from N.W. in Ireland and from W. and S.W. in England. Aurora Borealis was seen on the nights of Wednesday and Thursday. On Friday afternoon a sudden rise of temperature took place. This high temperature was more than maintained on Saturday, which was spring-like in its mildness—dull, however, in England, although bright in Ireland. In Dublin the mean atmospherical pressure was only 29·534 inches, the barometer ranging from 29·838 inches at 9 p.m. of Sunday (wind, W.) and also at 9 a.m. of Friday (wind, S.W.) to 28·790 inches at 7 30 a.m. of Tuesday (wind, W.). The mean temperature was 44·0°—highest, 56·4° on Saturday; lowest, 34·1° on Sunday. The mean dry bulb readings at 9 a.m. and 9 p.m. were 43·4°. Rain fell on five days, but only to the amount of ·257 inch, of which more than one-half (·143 inch) fell on Wednesday. The prevailing winds were W. and S.S.W.

Winter resumed its sway in the British Islands in the course of the week ended Saturday, the 25th, which began with mild, spring-like weather, and closed with frost and a snow-covered country. The most striking feature in the meteorological record for the period was the passage across the south of England in an east-north-easterly direction of a deep atmospherical depression in the interval between Monday night and Wednesday morning. In the South-east of England the barometer fell below 28·7 inches—to 28·65 inches at the mouth of the Thames—on Tuesday afternoon. The winds accompanying this system were not strong, but large quantities of rain, hail, and sleet fell in most districts. This inclement weather was all the more felt, as Sunday—while dull and rainy, though mild, in Ireland—had been a spring-like day in most parts of England, except the S.W. Bright sunshine was enjoyed for many hours, and the thermometer rose to 59° and even 60° (at Loughborough) in the shade all over the central and south-eastern counties. During the following night temperature gave way quickly and never recovered itself during the remainder of the week, except in the S. of England for a few hours in front of the deep depression already referred to. In Dublin hail, or sleet and snow, fell daily on and after Monday; and on Saturday morning there was a considerable fall of unusually light and powdery crystalline snow at a temperature varying from 27° to 31°. On the night of Saturday a violent snowstorm occurred, followed by rain. The weather was extremely cloudy and dull, except on Monday, Friday, and Saturday. In Dublin the mean height of the barometer was only 29·312 inches. Atmospherical pressure ranged between 29·557 inches at 9 a.m. of Sunday (wind, S.), and 28·916 inches at 7 30 a.m. of Tuesday (wind, N.N.E.). The mean temperature was 39·2°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 38·1°. On Sunday the thermometers in the screen rose to 52·6°. On Saturday they fell to 26·0°. The rainfall (which largely consisted of hail, snow, and sleet) measured ·993 inch, ·390 inch being referred to Wednesday. The prevailing winds were S.S.E. and E.

The last three days of the month were cold, changeable, but for the most part dry. There were sharp night frosts, and a solar halo was seen on the afternoon of the 28th, followed by a lunar halo at 8 p.m.

In Dublin, the rainfall up to February 28, 1893, amounted to 4·908 inches on 41 days, compared with 3·817 inches on 39 days in the same period in 1892, ·714 inch on 16 days in 1891, and a twenty-five years' (1865–1889) average of 4·350 inches on 34·5 days.

At Knockdolian, Greystones, Co. Wicklow, 3·890 inches of rain fell in February on 25 days; and 3·380 inches in January on 18 days. The total fall to February 28th inclusive was 7·270 inches on 43 days.

The rainfall in February at Cloneevin, Killiney, Co. Dublin, amounted to 2·60 inches, on 23 days. The average rainfall for February at this station is 1·543 inches, on 11·6 days. Both rainfall and rainy days were, therefore, considerably in excess this year—in fact it was a very wet month. The greatest rainfall in 24 hours was ·48 of an inch on the 1st. Since January 1, the rainfall was 5·53 inches, on 42 days.

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of March, 1893.

Mean Height of Barometer,	30·085 inches.
Maximal Height of Barometer (on 19th, at 9 a.m.),	30·411 ,,
Minimal Height of Barometer (on 1st, at 9 a.m.),	29·267 ,,
Mean Dry-bulb Temperature,	46·5°.
Mean Wet-bulb Temperature,	43·6°.
Mean Dew-point Temperature,	40·2°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·251 inch.
Mean Humidity,	79·6 per cent.
Highest Temperature in Shade (on 29th),	64·8°.
Lowest Temperature in Shade (on 17th),	34·0°.
Lowest Temperature on Grass (Radiation) (on 17th and 21st),	29·0°.
Mean Amount of Cloud,	49·1 per cent.
Rainfall (on 8 days),	·288 inch.
Greatest Daily Rainfall (on 2nd),	·101 inch.
General Directions of Wind,	W., E.N.E., E.S.E.

Remarks.

A singularly dry, warm, sunny month—more like May than March. It broke the record as regards height of temperature, deficiency of rainfall, and clearness of the sky and bright sunshine. The arithmetical mean temperature was 5·0° above the average for the month and no less than 9·0° above that of March, 1892 (39·1°). It was even 0·8 above the mean temperature of March, 1868 (47·3°), which had proved the warmest March since these records began in 1865 up to the present year. The deficiency in the rainfall was equally striking, the only comparable year for drought in March being 1871, when, however, ·815 inch of rain fell on 12 days against ·288 inch on 8 days in 1893. Not one-half of the sky was on the average covered with clouds, and the air was often very dry; consequently, the diurnal range of temperature was large—hot sunshine by day being followed by sharp nights. This was markedly the case in central England, where on more than one occasion during the latter half of the month the thermometer in the shade traversed more than 40° within a few hours.

In Dublin the arithmetical mean temperature (48·1°) was considerably above the average (43·1°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 46·5°. In the twenty-eight years ending with 1892, March was coldest in 1867 and 1883 (M. T. = 39·0°), and warmest in 1868 (M. T. = 47·3°). In 1876 the M. T. was 41·1°, in 1879 (the "cold year") it was 42·5°, in 1888 it was as low as 39·8°; in 1889 it was 44·0°, and in 1890 it was as high as 45·1°. In 1891, it was only 41·7°; and in 1892 it was as low as 39·1°. As a general rule, February in Dublin is only a shade colder than March. This is due to the fact that the Continental anticyclone usually embraces the British Isles and Scandinavia in March, causing easterly winds. In 1892 February was actually 2·2° warmer than March, but in the present year March was 5·4° warmer than February.

The mean height of the barometer was 30·085 inches, or 0·169 inch above the corrected average value for March—namely, 29·916 inches. The mercury rose to 30·411 inches at 9 a.m. of the 19th, having fallen to 29·267 inches at 9 a.m. of the 1st. The observed range of atmospherical pressure was, therefore, 1·144 inches—that is, more than an inch and one-tenth.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 46·5°, or 4·8° above the value for February, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·485), the M. T. becomes 47·9°. The arithmetical mean of the maximal and minimal readings was 48·1°, compared with a twenty-five years' average of 43·1°. On the 29th the thermometer in the screen rose to 64·8°—wind, W.S.W.; on the 17th the temperature fell to 34·0°—wind, W.N.W. The minimum on the grass was 29·0°, on the 17th and also on the 21st.

The rainfall was only ·288 inch, distributed over 8 days. The average rainfall for March in the twenty-five years, 1865–89, inclusive, was 2·061 inches, and the average number of rainy days was 16·5. The rainfall, therefore, was much below the average, while the rainy days were also much below it. In 1867 the rainfall in March was very large—4·972 inches on 22 days; in 1888, 3·753 inches fell on 18 days; in 1866 also 3·629 inches fell on 21 days. On the other hand, in 1871, only ·815 of an inch was measured on 12 days, and in 1874 only ·953 of an inch fell on 12 days. In 1887 (the "dry year"), 1·485 inches of rain fell on 15 days; in 1889, 1·076 inches fell on, however, as many as 17 days; in 1890 the fall was as much as 3·693 inches on 17 days; but in 1891 only ·933 of an inch fell on 16 days, and in 1892 only ·991 of an inch on but 9 days.

The atmosphere was thick with dry smoke fog in the city on 8 days, viz., the 2nd, 3rd, 13th, 19th, 20th, 24th, 25th, and 27th. High winds were noted on 11 days, reaching the force of a gale, however, on only one occasion, the 1st. Snow or sleet occurred on the 16th and 17th; and hail fell on the 1st and 16th. The temperature exceeded 50° in the screen on as many as 26 days compared with only 7 days in 1892, 9 days in 1891, and 19 days in 1890; while it never fell to 32° in the screen, whereas in March, 1892, frost occurred in the shade on as many as 16 nights. The minima on the grass were 32°, or less, on 12 nights, compared with 25 nights in 1892, 20 nights in 1891, and 16 nights in 1890. On 4 days the thermometer rose above 60° in the screen, while it never failed to reach 40°. In March, 1892, the thermometer did not rise to 40° in the screen on 9 days.

The first four days of the month were warm and changeable, with frequent rain or showers and variable, chiefly westerly, winds. As compared with the closing days of February a marked increase of atmospherical pressure occurred after Wednesday, the 1st. On that day a depression passed by the North of Ireland across Scotland towards Denmark. Temperature rose fast, and a considerable rainfall was reported from most British stations. A ridge of high pressure followed this disturbance, but on Friday, the 3rd, a shallower depression in the N., with a "secondary" in the S., again threw the weather into a cloudy, showery condition. Saturday, the 4th, however, proved fine, and for the most part bright in Ireland. On the 3rd the thermometer rose to 56·7° in the screen in Dublin.

Singularly favourable and mild weather for the time of year held over the British Islands throughout the week ended Saturday the 11th. The rainfall also was but slight except at some exposed stations in the N.W. of Ireland and N. of Scotland. In Scandinavia, however, conditions were far otherwise—severe cold and excessive gales and snow-storms being experienced. This state of things was brought about by the persistence of an anticyclone, in which at one time (Friday morning) the barometer touched 30·50 inches, off the S.W. and S. of Ireland; while a series of atmospherical depressions of ever increasing intensity swept eastwards across Northern Europe. Of these disturbances the most serious was observed on Friday, at 8 a.m. of which day the barometer was down to 28·72 inches at Hernösand in Sweden as compared with the reading 30·50 inches recorded at the same time at Valentia Island, in Kerry. Fresh to strong westerly to north-westerly winds prevailed generally in the United Kingdom. At first the sky was very cloudy, but towards the close of the week the clouds dispersed and the air became very dry, so that the diurnal range of temperature was large—at Cambridge, on Wednesday, the maximum was 66°, the minimum was 37°. In Dublin the mean height of the barometer was 30·287 inches, pressure ranging between 30·403 inches at 9 a.m. of Wednesday (wind W.) and 29·996 inches at 9 p.m. of Saturday (wind S.W.). The corrected mean temperature was 48·4°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 46·9°. On Sunday and again on Tuesday the thermometer rose to 55·8° in the screen; on Friday it fell to 37·0° in the screen, and 31·4° on the grass. The rainfall was ·034 inch on one day—Monday. The prevalent winds were westerly and north-westerly.

The most striking feature in the meteorology of the week ended Saturday, the 18th, was the continued depression of the barometer over the Norwegian Sea and the North of Europe generally. At first temperature was high for the time of year in all parts of the British Islands; but in England the diurnal range was extremely large—amounting to 30° or upwards between Sunday afternoon and Monday morning—at Loughborough the extreme thermometer readings at 8 a.m. of Monday were: Max. 66°, Min. 33°, range 33°. As the disturbances in the far North drew after them subsidiary depressions across the United Kingdom, temperature gave way and the weather fell into an unsettled, showery, squally condition. On both Thursday and Friday hail, sleet, and snow occurred in many parts, and electrical phenomena were observed along a track extending from the N. of Ireland across the S. of Scotland to the mouth of the Elbe. On Tuesday night bright aurora borealis had been seen in Scotland and the S. of Ireland. At 8 a.m. of Thursday the barometer stood as low as 28·54 inches at Christiansund on the W. coast of Norway, while it read 30·06 inches at Nice. Needless to say that strong S.W. to N.W. winds and gales swept over Western Europe. In Dublin the mean height of the barometer was 29·842 inches, pressure being observed to range from 29·575 inches at 7 15 a.m. of Thursday (wind, W.N.W.) to 30·386 inches at 9 p.m. of Saturday (wind, E.S.E.). The corrected mean temperature was 44·6°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 43·5°. On Sunday the screened thermometers rose to 55·9°, on Friday they fell to 34·0°. The rainfall measured ·118 inch on four days. The heaviest rainfall in 24 hours was ·058 inch on Saturday. Snow or sleet fell on Thursday and Friday; hail on Thursday. There was a slight fog on Monday night.

Many years have passed since a spell of more beautiful weather than that enjoyed during the week ended Saturday, the 25th, has been recorded in March. After Sunday, which was a cloudy day, very little cloud appeared by day or night, and warm sunny days were followed by calm, sharp nights. Throughout the week, conditions were anticyclonic in Western Europe. The centre of highest atmospherical pressure was generally found over the south of England, France, Belgium, and Holland, and in these regions, under the combined influence of a clear sky and dry air, the diurnal range of temperature was almost phenomenal. For example, at Loughborough, in Leicestershire, on Monday night the screened thermometer sank to 23°, while it rose to 65° in the course of Tuesday—a range of 42° in a few hours. A similar excessive range was observed on Saturday at the same station. In Ireland the extremes of temperature were of the same character, though much less marked. At the very beginning of the week severe frost occurred in Great Britain, the minima in the screen on Sunday being 26° at Leith, Shields, and Dungeness; 25° at York, and in London; 24° at Nairn; 23° at Oxford, and Cambridge; and 20° at Loughborough. The morning of this day in Ireland broke dull and damp, but the weather improved as the day wore on. In Dublin light easterly sea breezes by day alternated with calms by night. The mean height of the barometer was 30·313 inches, pressure ranging from 30·411 inches at 9 a.m. of Sunday (wind, S.S.E.) to 30·193 inches at 9 a.m. of Thursday (wind, calm), and again rising to 30·409 inches at 9 a.m. of Saturday (wind, E.). The corrected mean temperature was 48·2°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 46·2°. On Thursday, the screened thermometers rose to 61·9°; on Tuesday, they fell to 38·3°. There was no measurable rainfall after 9 a.m. of Sunday. Bright sunshine was unusually prevalent and greatly exceeded the mean during this week. At the Ordnance Survey Office, Phœnix Park, the sun shone brightly for 64·2 hours, being 76 per cent. of the possible duration of sunshine. In Guernsey the percentage was 90, in Jersey it was 91. These values in the Channel Islands are higher than any hitherto obtained during any period since the sunshine recorders were established in 1881. In nearly all British and Irish districts the percentages of bright sunshine recorded this week are far higher than any previously observed in the month of March.

The weather was by no means so settled during the closing period (26th–31st inclusive) as it had been during the preceding week. Clouds increased at times, and both atmospherical pressure and temperature became unsteady. Rainfall, however, was again markedly deficient in all parts of the United Kingdom, although in parts of Spain, Portugal, and the extreme south of France there were some heavy downpours—for example, ·67 inch fell at Lisbon on Tuesday, the 28th, and 1·50 inches at Perpignan on Wednesday, the 29th. Until this last-named day an anticyclone stretched northwestwards across the North Sea, while pressure was low and conditions were cyclonic over the Iberian Peninsula. Light to moderate easterly winds prevailed in the British Islands. The first two days of the period were cool and at times cloudy in Dublin. Tuesday proved brilliant, and on Wednesday (with the displacement of the easterly wind by a S.W. and W. current) the thermometer rose in this city to 64·8°. Thursday was cooler. On Good Friday, the 31st, a depression came in from the Atlantic causing squally S.W. winds and a slight rainfall in the evening. The diurnal range of temperature was again excessive at some inland English Stations—thus, on Tuesday, the thermometer fell from 67° to 26° at Cambridge and from 64° to 24° at Loughborough. In Dublin the barometer ranged from 30·299 inches at 9 a.m of Sunday (wind, N.E.) to 29·624 inches at 2 p.m. of Friday (wind, S.W.). On Monday the screened thermometers fell to 37·0°, on Wednesday they rose to 64·8°. Rain fell on Friday to the amount of ·022 inch only.

The rainfall in Dublin during the three months ending March 31st has amounted to 5·196 inches on 49 days, compared with 4·808 inches on 48 days in 1892, only 1·650 inches on but 32 days in 1891, 7·470 inches on 45 days in 1890, 5·738 inches on 53 days in 1889, 6·097 inches on 41 days in 1888, and a twenty-five years' average of 6·411 inches on 51·0 days (1865–1889, inclusive).

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of April, 1893.

Mean Height of Barometer,	30·171 inches.
Maximal Height of Barometer (on 8th, at 9 a.m.),	30·575 ,,
Minimal Height of Barometer (on 19th, at 4 p.m.),	29·793 ,,
Mean Dry-bulb Temperature,	50·3°.
Mean Wet-bulb Temperature,	47·2°.
Mean Dew-point Temperature,	43·8°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·288 inch.
Mean Humidity,	79·0 per cent.
Highest Temperature in Shade (on 22nd),	66·8°.
Lowest Temperature in Shade (on 14th),	36·2°.
Lowest Temperature on Grass (Radiation) (on 14th)	28·9°.
Mean Amount of Cloud,	40·0 per cent.
Rainfall (on 7 days),	1·046 inches.
Greatest Daily Rainfall (on 17th),	·370 inch.
General Directions of Wind,	N.W., E.N.E.,

Remarks.

April proved a fitting sequel to the record-breaking March of 1893. Like its predecessor, the month was characterised by drought, bright sunshine, and a high temperature. The mean amount of cloud was only 40 per cent., falling at 9 p.m. to 33·3 per cent. So powerful was the heating power of the sun by day that, notwithstanding free radiation by night, the thermometer did not fall below 36·2° in the screen, and 28·9° on the grass in the city of Dublin. The drought was happily interrupted in Ireland by copious falls of rain on the 16th and 17th, and again on the 29th and 30th.

In the matter of temperature, however, April, 1893, breaks the record, the mean being 3·7° above average, and also 1·0° above the mean of the Aprils of 1865 and 1874, which had been the warmest since the present records began up to 1893. Unwonted drought held throughout the month in south-eastern England, the rainfall in London, for example, being only one-tenth of an inch on only 4 days.

In Dublin the arithmetical mean temperature (51·4°) was 3·7° above the average (47·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 50·3°. In the twenty-eight years ending with 1892, April was coldest in 1879 (the cold year) (M. T. = 44·5°), and warmest in 1865 and 1874 (M. T. = 50·4°). In 1886 the M. T. was 46·3°, in 1887 it was as low as 45·1°, in 1888 it was (as also in 1891) only 45·7°, in 1889, 46·1°; in 1890, 47·3°; and in 1892, 46·2°. The month now under discussion thus proves to have been the warmest for at least 30 years.

The mean height of the barometer was 30·171 inches, or 0·321 inch above the average value for April—namely, 29·850 inches. The mercury was as high as 30·575 inches at 9 a.m. of the 8th, and fell to 29·793 inches at 4 p.m. of the 19th. The observed range of atmospherical pressure was, therefore, 0·782 inch—that is, a little more than three-quarters of an inch.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 50·3°, or 3·8° above the value for March, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·476), the value becomes 51·1°, or 3·7° above the average mean temperature for April, calculated in the same way, in the twenty-five years, 1865–89, inclusive (47·4°). The arithmetical mean of the maximal and minimal readings was 51·4°, compared with a twenty-five years' (1865-1889 inclusive) average of 47·7°. On the 22nd the thermometer in the screen rose to 66·8°—wind, S.E.; on the 14th the temperature fell to 36·2°—wind, W.S.W. The minimum on the grass was 28·9°, also on the 14th.

The rainfall was only 1·046 inches, distributed over 7 days. The average rainfall for April in the twenty-five years, 1865–89, inclusive, was 2·055 inches, and the average number of rainy days was 15·2. The rainfall, therefore, was considerably below the average, while the rainy days were also very deficient. In 1877 the rainfall in April was very large—4·707 inches on 21 days; in 1882 also 3·526 inches fell on 20 days. On the other hand, in 1873, only ·498 of an inch was measured on days; and in 1870 only ·838 of an inch fell, also on 8 days. The fall in 1890 was 1·575 inches on 14 days, in 1891, 1·553 inches fell on 14 days, and in 1892, 1·114 inches on 13 days.

There was a lunar halo on the 26th. The atmosphere was more or less foggy on the 6th and 17th. High winds were noted on only 4 days, and did not reach the force of a gale on any occasion. No snow or sleet was seen, but hail fell on the 29th. The temperature exceeded 50 in the screen on every day compared with only 24 days in April, 1892, and 18 days in April, 1891. It rose above 60° on 11 days, but never fell to 32° in the screen. The minimum on the grass was 32°, or less, on 5 nights, compared with 12 nights in March, 13 in February, and 16 in January. The mean lowest temperature on the grass was 38·2°, compared with 32·4° in 1892, 34·1° in 1891 and 1890, 34·4° in 1889, 34·6° in 1888, and 31·6° in 1887.

The first day of the month was cloudy and cool, but dry.

The drought, which set in at the beginning of March, continued through the week ended Saturday, the 8th. Temperature showed a decided tendency to fall, particularly on the eastern coasts of both Ireland and Great Britain, in which parts much sea-fog was prevalent. At the beginning of the week an anticyclone lay over Ireland and England, while an extensive and deep depression, with central barometrical readings below 28·90 inches, swept eastwards across the extreme North of Europe. Beautiful, bright weather prevailed, except in the far north, where clouds gathered and rain fell. Shallow depressions formed over the S.W. of Europe on and after Tuesday, so that a decided easterly air-current set in and fogs and low temperatures prevailed on the east coasts of the British Isles, while bright sunshine and warmth held inland. The most striking example of these conditions was presented on Thursday, when the thermometer rose to 63° at Loughborough, Oxford, and Cambridge—all inland stations, whereas the maximum was only 44° at Yarmouth and 42° at Spurn Head. On Friday the maximum was 68° in London, but only 42° at Shields and Spurn Head. After Thursday a new and much larger anticyclone formed in the N.W. and N., causing N.E. winds, clouds, and low temperatures on Friday and Saturday. In Dublin the mean pressure was 30·302 inches, the barometer falling to 30·051 inches at 6 30 p.m. of Wednesday (wind, E.) and rising to 30·575 inches, at 9 a.m. of Saturday (wind, N.E.). The corrected mean temperature was 48·5. The mean dry bulb readings at 9 a.m. and 9 p.m. were 48·0°. On Sunday the screened thermometers fell to 36·5°, on Wednesday they rose to 61·4°. A very slight shower fell at 5 p.m. of Thursday, but yielded no measurable rainfall. The prevailing wind was easterly.

With the exception of a general decrease of temperature, the weather of the week ended Saturday, the 15th, resembled that of its immediate predecessors, being singularly fine, dry, and quiet. Anticyclonic areas were found lying over one or another portion of the British Islands on every day of the week. At the same time shallow atmospherical depressions lay over southern Europe and the Mediterranean Basin, producing easterly winds and lower temperature in England and Ireland; while deeper cyclonic systems passed eastwards or south-eastwards across northern Europe, where frost and snow resumed their sway as the week advanced. Towards the close of the period the anticyclone began to move southwards, its centre on Thursday lying over the South of Scotland, on Friday over the midland counties of England, and on Saturday over the east of France. Sharp night-frosts were felt at many stations during the week—the sharpest of all occurred on Thursday night, when the thermometer fell to 24° in the screen at Loughborough and Cambridge, and to 27° at Oxford. In Dublin, Sunday, Tuesday, and Thursday were rather cloudy and very cool. Wednesday, also, was cold, but the air was dry and bright sunshine prevailed. In this city the mean height of the barometer was 30·331 inches, pressure ranging from 30·479 inches at 9 a.m. of Wednesday (wind, E.N.E.), to 30·103 inches at 9 p.m. of Saturday (wind, W. by S.). The corrected mean temperature was 47·6°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 47·0°. On Friday, the screened thermometers fell to 36·2°, on Saturday they rose to 60·6°. There was no rainfall until the early morning of Sunday, the 16th, when two-thousandths of an inch (·002) fell. The prevailing winds were, at first, E.N.E., afterwards W. and W.S.W.

While the general character of the weather during the week ended Saturday, the 22nd, was favourable, conditions were less stable than of late, and at the beginning of the week a grateful and copious rainfall in Ireland and Scotland gave a marvellous impetus to vegetation. On Sunday morning a shallow depression was found off the N.W. of Ireland, and a much deeper depression—with central readings of the barometer as low as 28·75 inches at Haparanda on the Gulf of Bothnia—was travelling eastwards across Lapland. In the course of the day rain fell in abundance at most Irish and several British stations, the downpour being renewed on Monday evening. At this time a well-defined anticyclone lay over the North Sea, influencing the English stations and causing finer and cooler weather. On Thursday morning the distribution of atmospherical pressure was very irregular, and several local and shallow depressions caused thunder showers in parts of Great Britain. Temperature had previously risen to an unusual height for the time of year at inland stations—to 68° at Parsonstown, 72° at Holyhead, 75 in London and at Oxford, 76° at Loughborough, and 78° at Cambridge on Wednesday. In Dublin the maximum next day (Thursday) was 66·6°, but in London it was 82° and at Cambridge 84°. Friday was very fine, but at night thunderstorms occurred at Roche's Point and Scilly. Saturday proved very warm but changeable in Ireland. In Dublin the mean height of the barometer was 30·014 inches, pressure varying between 30·151 inches at 9 p.m. of Thursday (wind N.) and 29·793 inches at 4 p.m. of Wednesday (wind, E.S.E.). The corrected mean temperature was 55·3°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 54·5°. On Friday the minimal temperature was 46·0°, on Saturday the maximum was 66·8°. Rain fell on five days to the total amount of ·762 inch, ·370 inch being measured on Monday. The prevalent winds were first S.W., afterwards E.S.E.

The record is once more one of most favourable weather during the week ended Saturday, the 29th. Bright, sunny, warm days were followed by quiet, clear, cool nights until Saturday, when copious showers fell at intervals, refreshing the face of nature and aiding vegetation. Areas of relatively high atmospherical pressure (anti-cyclonic systems) were found lying over the greater part of the British Islands until Saturday, when an extensive and definite depression travelled eastwards across the northern half of the United Kingdom, causing squally W. to N.W. winds and the grateful showers already mentioned. Throughout the week the barometer was comparatively low over the Iberian Peninsula, the Bay of Biscay, and France. Except at Lisbon, however, where 3·40 inches of rain fell on five days up to Friday morning, the weather was at first generally dry within the area of low pressure. On Thursday there was a downpour all over the South of France, ·83 inch being measured at Nice, ·87 inch at Biarritz, and 1·34 inches at Perpignan on Friday morning. Thunderstorms occurred at Prawle Point during the night of the 22nd-23rd, and at Holyhead on Monday night. In Dublin the mean height of the barometer was 30·067 inches, pressure varying from 30·137 inches at 9 a.m. of Monday (wind N.) to 29·887 inches at 3 p.m. of Saturday (wind W.N.W.). The corrected mean temperature was 53·8°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 52·5°. On Tuesday temperature rose to 65·7° in the shade; on Saturday it fell to 43·9°. Rain and hail fell on Saturday in heavy showers to the amount of ·150 inch. The prevailing winds were N. and N.W.

Sunday, the 30th, was changeable, but favourable.

The rainfall in Dublin during the four months ending April 30th amounted to 6·242 inches on 56 days, compared with 5·922 inches on 61 days during the same period in 1892, only 3·203 inches on 46 days in 1891, 9·045 inches on 59 days in 1890, 8·345 inches on 74 days in 1889, 8·090 inches on 58 days in 1888, and a twenty-five years' average of 8·466 inches on 66·2 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall during April, 1893, amounted to only 1·055 inches, distributed over only 5 days—·720 inch falling on the 16th. The total fall since January 1st, 1893, equalled 8·530 inches on 54 days.

The rainfall in April at Cloneevin, Killiney, Co. Dublin, was 1·15 inches on 6 days, as against an eight-years' average of 1·56 inches on 13·0 days. The maximal fall in 24 hours was ·63 inch on the 16th.

— — 56 52 348 9 346 E., SE, W. 2 46 — — — — 10 Days — — 30·032

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

48·9 76%

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of May, 1893.

Mean Height of Barometer,	30·037 inches.
Maximal Height of Barometer (on 10th, at 9 a.m.),	30·455 ,,
Minimal Height of Barometer (on 19th, at 4 p.m.),	29·407 ,,
Mean Dry-bulb Temperature,	55·3°.
Mean Wet-bulb Temperature,	52·0°.
Mean Dew-point Temperature,	49·0°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·347 inch.
Mean Humidity,	79·9 per cent.
Highest Temperature in Shade (on 11th),	70·2°.
Lowest Temperature in Shade (on 31st),	42·8°.
Lowest Temperature on Grass (Radiation) (on 31st)	38·8°.
Mean Amount of Cloud,	62·3 per cent.
Rainfall (on 10 days),	1·666 inches.
Greatest Daily Rainfall (on 20th),	·720 inch.
General Directions of Wind,	E.,S.E., W.N.W.

Remarks.

Like March and April of the present year, this month was singularly fine—warm and for the most part dry. Unlike March and April, however, the amount of cloud was considerable—62·3 per cent. compared with only 49·1 per cent. in March, and only 40·0 per cent. in April. Nor was the drought at all as severe as in the two previous months. In Dublin rain fell abundantly at the beginning and in the middle of the month, the total fall being 1·666 inches, against only ·288 inch in March and 1·046 inches. As regards temperature, this was a "record month," the mean being 0·9° above that for May, 1868—namely, 56·7° against 55·8°, in April.

In Dublin the arithmetical mean temperature (56·7°) was decidedly above the average (52·0°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 55·3°. In the twenty-eight years ending with 1892, May was coldest in 1869 (M. T. = 48·2°), in 1885 (M. T. 48·7°), and in 1879 (the "cold year") (M. T. = 48·8°). It was warmest in 1868 (the "warm year") M. T. = 55·8°, and 1875 (M. T. = 54·9°). In 1886 the M. T. was 50·5°; in 1887, 51·8°; in 1888, 52·5°; in 1889, 54·6°; in 1890, 53·2°; in 1891, only 49·6°; and in 1892, 53·8°.

The mean height of the barometer was 30·037 inches, or 0·048 inch above the corrected average value for May—namely, 29·989 inches. The mercury rose to 30·455 inches at 9 a.m. of the 10th, and fell to 29·407 inches at 4 p.m. of the 19th. The observed range of atmospherical pressure was, therefore, 1·048 inches.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 55·3°, or 5·0° above the value for April, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·47), the value was 56·3°, or 4·7° above the average mean temperature for May, calculated in the same way, in the twenty-five years, 1865–89, inclusive (51·6°). The arithmetical mean of the maximal and minimal readings was 56·7°, compared with a twenty-five years' average of 52·0°. On the 11th the thermometer in the screen rose to 70·2°—wind, W.N.W.; on the 31st the temperature fell to 42·8°—wind, N.N.E. The minimum on the grass was 38·8°, also on the 31st.

The rainfall amounted to 1·666 inches, distributed over 10 days. The average rainfall for May in the twenty-five years, 1865–89, inclusive, was 2·030 inches, and the average number of rainy days was 15·4. The rainfall and the rainy days, therefore, were much below the average. In 1886 the rainfall in May was very large—5·472 inches on 21 days; in 1869 also 5·414 inches fell on 19 days. On the other hand, in 1871, only ·378 of an inch was measured on 9 days; in 1876 only ·798 of an inch fell on 6 days; in 1887 only ·882 of an inch on 10 days; and in 1888 only ·978 of an inch on 11 days. In 1890, 2·438 inches fell on 17 days. In 1891 May was the first month in which the rainfall exceeded the average. It amounted to 2·792 inches on 17 days. In 1892 the large amount of 4·177 inches fell on 15 days.

Solar halos were seen on the 6th and 10th. High winds were noted on only 4 days, never attaining the force of a gale. Thunder was heard on the 15th, 20th, and 29th. No hail, sleet, or snow fell.

During the month the thermometer did not fall below 32°, either in the screen or on the grass. The mean minimal temperature on the grass was 45·6°, compared with 41·3° in May, 1892, 37·7° in 1891, 42·2° in 1890, 42·4° in 1889, 37·5° in 1888, and 37·9° in 1887.

During the period ended Saturday, the 6th, the weather was most favourable. Rain fell in copious showers on Monday and Tuesday, the 1st and 2nd, after which came a succession of fine, dry days, with intervals of hot sunshine. On Sunday, April 30, a "hollow" of low atmospherical pressure stretched south-eastwards from Iceland to Denmark, so that N.W. winds, low temperatures, and changeable showery weather were experienced in the British Islands. During the next two days the barometer was unsteady, especially over Ireland and Scotland, in which countries rain fell pretty freely. In the South of England and the neighbourhood of London, however, the drought continued almost uninterruptedly. On Thursday a large anticyclone began to form over Norway, the North Sea, and Great Britain, and the weather became once more finer, brighter, and warmer. Over Ireland much cirriform cloud was at this time daily observed travelling in an upper air-current from S.W., while the surface wind was S.E. or E. In Dublin the air-pressure ranged from 29·778 inches, at 4 p.m. of Tuesday (wind S.W.) to 30·284 inches at 9 a.m. of Saturday (wind E.S.E.). On Monday the shade minimum was 46·1°, on Friday the shade maximum was 68·9°. Rain fell on the first two days to the amount of ·402 inch, ·323 inch being measured on Monday, the 1st. The prevalent winds were first westerly, then east-south-easterly. A solar halo was seen on Saturday forenoon.

The weather was exceedingly fine and dry throughout the week ended Saturday, the 13th—at least in England and Ireland—in Scotland refreshing rains fell on Wednesday and the two following days. Atthe beginning of the period a vast anticyclone stretched south-westwards from Sweden, where the barometer stood above 30·9 inches (30·95 inches at Hernosand at 8 a.m of Sunday), across the North Sea to the British Isles. The wind was rather squally from E. and S.E. and temperature was low—night frosts occurring in parts of England as well as on the Continent. By Wednesday a great change was in progress—the barometer was falling in h N rising in the S., while a tongue of high pressure still stretched across England and Ireland. The change was attended by a copious rainfall in many parts of France on Tuesday; and was followed by the setting in of westerly winds over the northern half of the British Isles, where also clouds increased and rain fell as above mentioned. After a sharp night on Wednesday, temperature rose considerably in England on Thursday, when also the thermometer exceeded 70° in the shade in Dublin for the first time this season. Friday was at first cloudy, but afterwards fair; and Saturday proved a brilliant summerlike day. In Dublin the mean height of the barometer was 30·317 inches, pressure ranging from 30·455 inches at 9 a.m. of Wednesday (wind, E.N.E.) to 30·070 inches at 9 p.m. of Saturday (wind, calm). The corrected mean temperature was 55·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 55·5°. On Thursday the thermometer rose to 70·2° in the shade, having fallen to 47·1° on Wednesday. There was no rainfall. The prevailing winds were E. and W.N.W.

The week ended Saturday, the 20th, may be said to have witnessed the break-up of the drought, which—with slight and transitory interruptions—had held in Western Europe since the end of February. At the beginning the barometer was falling over England, Ireland, and the West of France, as a large, but not deep, depression formed over the Bay of Biscay and the Atlantic off our S.W. coasts. On Sunday the weather remained dry in most places, but much lofty cirriform stratus cloud came up from the southward, causing the sky to assume an unsettled, thundery appearance. On Monday thunder storms occurred in the West of England and in Wales, and from that time onwards to the close of the week thunder and lightning were daily reported from one part or another of the British Islands. Some very heavy rainfalls occurred—for example, 1·05 inches at Roche's Point on Tuesday, 1·60 inches at Loughborough on Wednesday, ·71 inch at Parsonstown on Friday, and ·72 inch in the City of Dublin on Saturday. On this day 1·030 inches of rain fell at the Ordnance Survey Office, Phœnix Park, and 1·020 inches at the Botanic Gardens, Glasnevin. As temperature remained fairly high throughout, the beneficial effects of the rainfall on vegetation became instantly apparent. In Dublin the mean height of the barometer was 29·634 inches, or as much as ·683 inch below the mean for the preceding week. The barometer read 30·010 inches at 9 a.m. of Sunday (wind E.S.E.), and fell to 29·407 inches at 4 p.m. of Friday (wind E.S.E.). The corrected mean temperature was 57·4°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 55·4°. On Sunday the screened thermometers rose to 65·7°, on Saturday they fell to 48·2°. Distant thunder was heard on Monday and Saturday. Rain fell on three days to the amount of ·947 inch, ·720 inch being measured on Saturday. The prevailing winds were E. and S.E.

Changeable, but favourable weather prevailed during the week ended Saturday, the 27th. At first showery, it afterwards became dry and fine, although the amount of cloud remained considerable to the end. The period began with a high pressure system lying over the Baltic and Scandinavia, and depressions to the westward and northwestward of the British Islands. As the week advanced these conditions became reversed—the depressions travelled northeastward, and a new area of high pressure (anticyclone) came in over Ireland from the Atlantic. At the close of the period a low pressure system was found over the Baltic and Sweden, while the anticyclone remained almost stationary over, and off the west coast of, Ireland. In Dublin Sunday forenoon was rainy; light showers fell in the afternoon, but the evening proved fair. Monday was cloudy but fine. Tuesday was cloudy, showery, and squally. Some rain fell on Wednesday morning, after which the weather remained chiefly dry but very cloudy to the close of the week. The mean height of the barometer in Dublin was 30·014 inches, pressure ranging from 29·543 inches at 9 a.m. of Sunday (wind, W.) to 30·337 inches at 9 p.m. of Friday (wind, N.N.W.). The corrected mean temperature was 56·6°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 55·7°. On Sunday the screened thermometers fell to 46·9°; on Saturday they rose to 64·8°. Rain was measured on four days, the total amount being ·137 inch, of which ·059 inch fell on Sunday. The prevalent wind was first westerly, then northerly.

During the last four days the weather, which was chiefly fine but changeable, was governed by a depression over the south of Sweden and an anticyclone to the westward of Scotland. North-easterly winds prevailed, and a tendency to electrical disturbances existed on Sunday and Monday, the 28th and 29th. On the afternoon of the latter day thunder and heavy rain occurred in both London and Dublin. The weather on the 30th and 31st was bright and bracing—hot sunshine and a cold N.E. wind asserting themselves with alternate power.

The rainfall in Dublin during the five months ending May 31st amounted to 7·908 inches on 66 days, compared with 10·099 inches on 80 days in 1891, only 5·995 inches on 63 days in 1891, 11·483 inches on 76 days in 1890, 10·476 inches on 91 days in 1889, 9·068 inches on 69 days in 1888, 6·489 inches on 62 days in 1887, and a twenty-five years' average of 10·496 inches on 81·6 days.

It may be remembered that on Saturday, May 28th, 1892, 2·056 inches of rain were measured at this station, 1·900 inches having fallen within 6 hours, or at the rate of 7·6 inches in 24 hours. No such measurement had been recorded in Dublin since October 27, 1880, when 2·736 inches of rain fell. May 28, 1892, was only the third occasion within the past twenty-eight years on which the rainfall exceeded 2 inches within 24 hours in Dublin.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in May, 1893, was 1·035 inches, distributed over 11 days. Of this quantity ·310 inch fell on the 16th, and ·200 inch on the 29th. The total fall since January 1st, 1893, equals 10·583 inches on 78 days.

At Cloneevin, Killiney, Co. Dublin, the rainfall in May was 1·12 inches on 10 days, compared with an eight years' average of 2·49 inches on 15·5 days. The total fall since January 1 at this station has been 8·06 inches on 67 days.

The maximal fall on any one day in May was ·40 inch on the 20th.

61 156352 5399 Mic. 2448 — — — — 12 Days. — — 29.9

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

52 5 73°

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of June, 1893.

Mean Height of Barometer,	30·003 inches.
Maximal Height of Barometer (on 7th, at 9 a.m.),	30·398 ,,
Minimal Height of Barometer (on 27th, at 11 p.m.),	29·320 ,,
Mean Dry-bulb Temperature,	59·9°.
Mean Wet-bulb Temperature,	56·0°.
Mean Dew-point Temperature,	52·8°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·402 inch.
Mean Humidity,	78·5 per cent.
Highest Temperature in Shade (on 19th),	74·7°.
Lowest Temperature in Shade (on 23rd),	46·9°.
Lowest Temperature on Grass (Radiation) (on 23rd)	42·8°.
Mean Amount of Cloud,	46·2 per cent.
Rainfall (on 12 days),	1·716 inches.
Greatest Daily Rainfall (on 26th),	·492 inch.
General Directions of Wind,	E., N.W., S.E.

Remarks.

June, 1893, was the fourth month in succession with a mean temperature above average and a rainfall below average. The month under review did not—it is true—"break the record" as regards either high temperature or scanty rainfall; but it was in all respects most favourable. In Dublin rain fell freely from the 3rd to the 6th inclusive (·521 inch) and again from the 22nd to the 28th inclusive (1·144 inches), but the weather was otherwise dry, except for local thunder-showers on the 15th.

In Dublin the arithmetical mean temperature (59·9°) was above the average (57·8°) by 2·1°; the mean dry bulb readings at 9 a.m. and 9 p.m. were also 59·9°. In the twenty-eight years ending with 1892, June was coldest in 1882 (M. T. = 55·8°), and in 1879 (the "cold year") (M. T. = 55·9°). It was warmest in 1887 (M. T. = 62·3°), in 1865 (M. T. = 61·0°), and in 1868 (the "warm year") (M. T. = 60·5°). In 1886 the M. T. was 57·5°; in 1888, 56·2°; in 1889, 59·5°; in 1890, 58·1°; in 1891, 59·0°; and in 1892, 56·7°.

The mean height of the barometer was 30·003 inches, or 0·086 inch above the corrected average value for June—namely, 29·917 inches. The mercury rose to 30·398 inches at 9 a.m. of the 7th, and fell to 29·320 inches at 11 p.m. of the 27th. The observed range of atmospherical pressure was, therefore, 1·078 inches—that is, less than an inch and one-tenth.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 59·9°, or 4·6° above the value for May, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·465), the value was 59·4°, or 2·1° above the average mean temperature for June, calculated in the same way, in the twenty-five years, 1865–89, inclusive (57·3°). The arithmetical mean of the maximal and minimal readings was 59·9°, compared with a twenty-five years' average of 57·8°. On the 19th the thermometer in the screen rose to 74·7°—wind, N.N.E.; on the 23rd the temperature fell to 46·9°—wind, N.N.W. The minimum on the grass was 42·8° also on the 23rd.

The rainfall amounted to 1·716 inches, distributed over 12 days. The average rainfall for June in the twenty-five years, 1865–89, inclusive, was 1·817 inches, and the average number of rainy days was 13·8. The rainfall was, therefore, slightly below, while the rainy days were also below the average. In 1878 the rainfall in June was very large—5·058 inches on 19 days; in 1879 also 4·046 inches fell on 24 days. On the other hand, in 1889, only ·100 of an inch was measured on 6 days; in 1887 the rainfall was only ·252 of an inch, distributed over only 5 days; in 1874 only ·405 of an inch was measured on 9 days; and in 1868 only ·677 of an inch fell on but 6 days. In 1888 the rainfall was as much as 3·045 inches, distributed over as many as 18 days In 1890 it was 1·930 inches on 18 days, in 1891 2·753 inches on 14 days, and in 1892 1·671 inches on 17 days.

High winds were noted on 7 days, but the force of a gale was attained on only one occasion—the 28th. Temperature reached or exceeded 70° in the screen on 5 days, compared with 17 days in 1887, only 1 day in 1888, 10 days in 1889, only 2 days in 1890, 6 days in 1891, and 4 days in 1892. Thunder was heard on the 15th. A solar halo was seen on the 11th.

On Thursday, the 1st, a depression which had for several days lain almost motionless over the south of Sweden dispersed, and an irregular area of low pressure began to form over Ireland. The weather, however, remained dry until Saturday, the 3rd, when electrical showers fell heavily in places, particularly at Blackrock, Co. Dublin. Thunder was heard on this day at Glasnevin Botanic Gardens.

At the beginning of the week ended Saturday, the 10th, the weather was unsettled and showery, owing to the presence of shallow irregular depressions to the northward, while an anticyclone lay over the Bay of Biscay. In Dublin rain fell very freely on Monday and in smaller quantity on Tuesday. On Sunday thunderstorms occurred all along the east coast of Great Britain. During most of this changeable time the barometer rose steadily, so that by 8 a.m. of Wednesday readings were everywhere high and remarkably uniform. In fact, at the hour named, the extreme difference in atmospherical pressure all over the United Kingdom was only ·08 inch—the highest reading being 30·42 inches at Yarmouth, and the lowest 30·34 inches in the Scilly Islands. After Wednesday the anticyclone held to the close of the week, the area of highest pressure being found off the east coast of Scotland, where dense fogs and low temperature prevailed. In most other parts of the Kingdom summer warmth daily increased until Saturday—the thermometer rising to 79° at Loughborough on Wednesday, 76° at Liverpool on Thursday, and 74° at Parsonstown and in London on Friday. On the evening of this day a thunderstorm with heavy rain (1·19 inches) occurred at Parsonstown. In Dublin the mean height of the barometer was 30·313 inches, pressure ranging between 30·105 inches at 9 a.m. of Sunday (wind W. by S.) and 30·398 inches at 9 a.m. of Wednesday (wind, N.E.) The corrected mean temperature was 58·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 59·2°. On Thursday both maximal and minimal temperatures for the week were recorded—viz., 69·6° and 49·5°—range, 20·1°. Rain fell on the first three days to the amount of ·512 inch, ·259 inch being registered on Sunday and ·201 inch on Monday. The prevailing winds were at first W.S.W., afterwards E. Much fog and haze prevailed in the Irish Sea after Wednesday, so that the fog-gun at the Kish-bank lightship was frequently fired both by day and by night.

Splendid weather characterised the week ended Saturday, the 17th. Until Wednesday it was cool as well as fair, but on and after that day temperature was high and summerlike by night as well as by day. On Sunday local thunderstorms occurred in the N. and N.W. of Ireland, notwithstanding an anticyclonic distribution of atmospheric pressure. After Sunday a shallow depression advanced northwards across France. It caused thunderstorms and heavy rains over the greater part of that country, but in the British Isles only local thundershowers occurred, although thunder and lightening were very prevalent on Wednesday and Thursday. On the afternoon of the latter day thundershowers fell in Dublin, yielding ·051 inch of rain, the only rainfall of the week. In this city the influence of easterly sea breezes in lowering day-temperature was well seen, particularly in the earlier part of the period—thus, the maxima of the first four days were 66°, 65°, 65°, and 67° in Dublin, compared with 75°, 70°, 71°, and 75° at Parsonstown. On the east coast of Great Britain, similarly, the thermometer failed to reach 60° at most stations on Sunday and Monday. In Dublin the mean height of the barometer was 30·104 inches, pressure decreasing from 30·229 inches at 9 a.m. of Sunday (wind, E.N.E.) to 29·883 inches at 9 a.m. of Wednesday (wind E.), and then increasing to a maximum of 30·373 inches at 9 p.m. of Saturday (wind E.). The corrected mean temperature was 61·8° The mean dry bulb readings at 9 a.m. and 9 p.m. were 62·9°. On Tuesday the screened thermometers fell to 50·1°, on Saturday they rose to 72·9°. The mean direction of the wind was easterly.

As to the week ended Saturday, the 24th—at first summerlike in the extreme—very warm, calm and bright—the weather afterwards fell into a very unsettled state, becoming cold, squally, and showery after Wednesday, the 21st—the longest day. On Sunday, the anticyclonic isobar of 30·3 inches embraced nearly the whole of the British Islands—at 8 a.m. the extreme pressures at mainland stations differed by only *one-tenth* of an inch, the highest readings being 30·38 inches at Loughborough, Cambridge, Malin Head, and Belmullet; the lowest being 30·28 inches at Prawle Point, in Devon. The weather was bright, calm, and hot—the thermometer rising to 86° in the shade at Cambridge and Loughborough, and to 80° even at Parsonstown and Valentia Island. In the evening a thunderstorm occurred at the last-named station. On Monday the heat was still more intense—88° in the shade being recorded in London and at Cambridge. Thunderstorms occurred towards evening in the South of Ireland, South Wales, and the eastern and south-eastern parts of England. After this a cold northerly current passed rapidly southwards, bringing heavy showers which became general during the last three days. On Thursday a depression formed over Scotland and moved slowly south-eastwards and finally eastwards, becoming deeper and larger as it travelled. At 8 a.m. of Friday the barometer was down to 29·24 inches at Shields, and below 29·30 inches all over the north of England and south of Scotland. In Dublin the mean pressure was 29·849 inches, the barometer falling from 30·360 inches at 9 a.m. of Sunday (wind E.), to 29·467 inches at 9 a.m. of Friday (wind N. by W.). The corrected mean temperature was 59·1°—that for Sunday and Monday having been 64·8°. The mean dry bulb temperature at 9 a.m, and 9 p.m. was 58·7°. On Monday the thermometers in the screen rose to 74·7°; on Friday they fell to 46·9°. Rain fell on the last three days to the amount of ·310 inch, ·130 inch being measured on Thursday and ·100 inch on Saturday. The prevalent wind was northerly—N.N.E. to N.W.

During the closing period of the month—from the 25th to the 30th inclusive—the weather presented two distinct types. Unsettled, squally and showery as well as cool at first, it improved after Wednesday, the 28th, and the month closed with fine, warm, and in all respects summerlike conditions. On Sunday, the 25th, the well-defined depression, which had travelled from Scotland in a south-easterly direction on the previous Friday (see above), lay with its centre over the south of Norway. N.W. winds and cool, showery weather prevailed in the British Islands. In Dublin heavy showers fell locally at 3 30 and 11 p.m. Next day (Monday) an irregularly-shaped depression passed northwards across Ireland, causing a heavy rainfall in the south of this country (1·10 inches at Roche's Point, Cork), and in Wales and parts of England. During Tuesday and Wednesday a well-marked cyclonic system travelled north-eastwards from the N. of Ireland and across Scotland to the Norwegian Sea, where it dispersed. This disturbance produced moderate to fresh S.W. and W. gales at some Irish stations, as well as in the English Channel and off the mouth of the Thames. The barometer now rose quickly, and at 8 a.m. of Friday, the 30th, atmospherical pressure was uniformly high all over the kingdom—pressure ranging only from 30·20 inches over Central England to 30·05 inches at Belmullet. Quiet, bright, summerlike weather was the consequence, and so the month closed. In Dublin, during this period, the barometer ranged from 29·320 inches at 11 p.m. of Tuesday (wind, S.S.W.) to 30·142 inches at 9 a.m. of Friday (wind, S.E.). As regards temperature, on Monday and Friday the minimum in the thermometer screen was 50·0°; on Tuesday the maximum was 69·4°. Rain fell on the first four days of the period to the amount of ·834 inch, ·492 inch being registered on Monday. This was the maximal fall in 24 hours recorded during the month. The prevailing winds were S.E. and S.W.

The rainfall in Dublin during the six months ending June 30th amounted to 9·624 inches on 78 days, compared with 11·770 inches on 97 days in 1892, 8·748 inches on 77 days in 1891, 13·413 inches on 94 days in 1890, 10·576 inches on 97 days in 1889, 12·113 inches on 87 days in 1888, 6·741 inches on 67 days in 1887, and a twenty-five years' average of 12·313 inches on 95·4 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in June, 1893, was 2·211 inches, distributed over 10 days. Of this quantity ·750 inch fell on the 26th, and ·410 inch on the 5th. The total fall since January 1 has been 11·776 inches on 75 days.

The rainfall at Cloneevin, Killiney, Co. Dublin, amounted to 1·63 inches on 10 days. The greatest fall in 24 hours was ·61 inch on the 26th. The average rainfall for June in eight years was 1·42 inches on 11·5 days. There was absolute drought from the 7th to the 21st, both days inclusive. Since January 1, 1893, 9·69 inches of rain have fallen on 77 days, the average rainfall for the six months ending June 30 having been in eight years 10·66 inches on 82 days.

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

53·1 75% EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of July, 1893.

Mean Height of Barometer, - - -	29·896 inches.
Maximal Height of Barometer (on 27th, at 9 p.m.), -	30·234 ,,
Minimal Height of Barometer (on 19th, at 7 15 p.m.),	29·429 ,,
Mean Dry-bulb Temperature, - - -	60·5°.
Mean Wet-bulb Temperature, - - -	56·7°.
Mean Dew-point Temperature, - - -	53·5°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·410 inch.
Mean Humidity, - - - - -	78·5 per cent.
Highest Temperature in Shade (on 23rd), - -	74·5°.
Lowest Temperature in Shade (on 22nd), - -	50·0°.
Lowest Temperature on Grass (Radiation) (on 21st and 22nd) - - - - -	44·8°.
Mean Amount of Cloud, - - - -	62·8 per cent.
Rainfall (on 12 days), - - - -	2·042 inches.
Greatest Daily Rainfall (on 15th), - - -	·871 inch.
General Directions of Wind, - - -	W., N.W., N.E.

Remarks.

A changeable, rather showery, but warm month, of high mean temperature and almost average rainfall, with a decided prevalence of north-easterly and north-westerly winds.

In Dublin the arithmetical mean temperature (61·6°) was decidedly above the average (60·6°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 60·5°. In the twenty-eight years ending with 1892, July was coldest in 1879 (the "cold year") (M. T. = 57·2°). It was warmest in 1887 (M. T. = 63·7°), and in 1868 (the "warm year") (M. T. = 63·5°). In 1886 the M. T. was 61·0°; in 1888 it was as low as 57·3°; in 1889 it was 58·7°; in 1890, 58·1°; in 1891, 59·0°; and in 1892, 57·8°. From this, July, 1887 proves to have been the warmest since the present records commenced, whilst July, 1879, was the coldest. In only 2 years since 1864 was July colder than in the year 1892.

The mean height of the barometer was 29·896 inches, or ·019 inch below the corrected average value for July—namely, 29·915 inches. The mercury marked 30·234 inches at 9 p.m. of the 27th, and fell to 29·429 inches at 7 15 p.m. of the 19th. The observed range of atmospherical pressure was, therefore, 0·805 inch—that is, a little more than eight-tenths of an inch.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 60·5°, or 0·6° above the value for June, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·465), the value was 61·1°, or 0·9° above the average mean temperature for July, calculated in the same way, in the twenty-five years, 1865–89, inclusive (60·2°). The arithmetical mean of the maximal and minimal readings was 61·6°, compared with a twenty-five years' average of 60·6°. On the 23rd the thermometer in the screen rose to 74·5°—wind, S.W.; on the 22nd the temperature fell to 50·0°—wind, W.N.W. The minimum on the grass was 44·8° on the 21st and again on the 22nd.

The rainfall was 2·042 inches, distributed over 14 days. The average rainfall for July in the twenty-five years, 1865–89, inclusive, was 2·420 inches, and the average number of rainy days was 17·2. The rainfall, therefore, was considerably below the average, while the rainy days were also below it. In 1880 the rainfall in July was very large—6·087 inches on 24 days; in 1871 also 4·391 inches fell on 28 days. On the other hand, in 1870, only ·539 of an inch was measured on 8 days; in 1869 the fall was only ·739 of an inch on 9 days; and in 1868 only ·741 of an inch fell on but 5 days. In 1892, 1·952 inches fell on 12 days.

High winds were noted on 9 days, but did not attain the force of a gale on any occasion. Temperature reached or exceeded 70° in the screen on 8 days. In July, 1887, temperature reached or exceeded 70° in the screen on no fewer than 17 days. In July, 1888, the maximum was only 68·7°. In July, 1891, maxima of 70° were reached on only 3 days, and in July, 1892, on only 2 days. Severe thunderstorms occurred on the 12th, and distant thunder was heard on the 13th.

Saturday, the 1st, was very fine and warm, with beautiful cirro-cumuli travelling from S.

Warm and generally favourable weather held during the week ended Saturday, the 8th. In parts of England severe thunderstorms and heavy rains were felt in the beginning—on Sunday and Monday in the N. and N.E. as well as in the North Midland Counties; on Tuesday, in the S.W. and S. of that country and in the English Channel. On Saturday electrical disturbances were again prevalent. On Monday the rainfall was 1·38 inches at York and 1·8 inches at Stoke-on-Trent; on Tuesday 2·05 inches of rain fell at Prawle Point in Devonshire, 1·15 inches at Jersey, ·91 inch at Hurst Castle, in Hants, and ·57 inch at Dungeness in Kent. The distribution of atmospherical pressure was irregular and shifting until Thursday, when the barometer began to give way steadily in the west, and freshening S.E. and S. winds sprang up on the Irish coasts, with heavy rain at Valentia Island (·68 inch to 8 a.m. of Friday). The heat in England was very great on Sunday, when the thermometer rose to 83° at Oxford, 84° in London and at Loughborough, and 85° at Cambridge; and also on Thursday, when the maxima were 81° at Loughborough, 83° at Oxford, 84° in London, and 86° at Cambridge. On Friday the thermometer rose to 90° at Cambridge, 88° at Loughborough, and 87° in London. At 8 a.m. of Saturday temperature was 80° in London and 79° at Cambridge, and the thermometer subsequently rose to 87° in London, 92° at Cambridge, and 96° locally at Elsing in Norfolk. In Ireland, the highest readings were about 12° to 15° lower—75° being touched at Belmullet, Co. Mayo, on Wednesday. In Dublin the maximum exceeded 70° on five days, the highest reading of all being 71·8 on Monday and Saturday. The minimum in the screen was 54·2° on Thursday. The mean height of the barometer was 29·960 inches, pressure falling from 30·201 inches at 9 a.m. of Monday (wind, N.E.) to 29·591 inches at 9 p.m. of Saturday (wind, S.E.). The corrected mean temperature was 63·2°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 62·8°. The rainfall was ·187 inch on one day—·184 inch of the amount fell on the morning of Sunday, July 9. The prevailing winds were first N E., afterwards S.E.

Very unsettled, rainy, thundery weather held during the greater part of the week ended Saturday, the 15th, and temperature showed a decided falling off compared with the previous sennight. At 8 a.m. of Sunday a depression lay over the British Islands, its centre stretching from Ulster to the Lowlands of Scotland. It caused heavy rains in many places—2·81 inches being measured at Malin Head on Monday morning. In Dublin rain fell in torrents from 11 to 11·30 a.m. of Sunday, and on this day as well as on Monday thunderstorms occurred over the greater part of England. On Tuesday a new depression appeared off the S.E. of Ireland, whence it travelled slowly eastwards and north-eastwards to the Kattegat, which it reached on Friday morning. This system was accompanied by severe thunderstorms in many places. On Wednesday two distinct storms passed over Dublin—the second causing torrents of rain (·550 inch) in an hour (3 15 to 4 15 p.m.). At the Ordnance Survey Office, Phœnix Park, the rainfall on this day was 1·120 inches. Next day also there were heavy thundershowers near this city. Friday proved cloudy and cool, but rainless. On Saturday, however, showers again set in, as a new and large but shallow depression advanced over our northern coasts. In Dublin the mean height of the barometer was 29·768 inches, pressure ranging from 29·532 inches at 9 a.m. of Sunday (wind, W.) to 30·019 inches at 9 p.m. of Friday (wind, N.). The corrected mean temperature was 58·0°, the mean dry bulb readings at 9 a.m. and 9 p.m. being 58·6°. On Wednesday temperature rose to 67·9° in the screen, on Friday it fell to 51·8°. The rainfall measured 1·389 inches, on five days, ·871 inch being registered on Wednesday and ·349 inch on Sunday. The wind was variable—S., N.E., N., and W. being the predominant directions.

Changeable, showery, but withal favourable weather held throughout the week ending Saturday, the 22nd. The general distribution of atmospherical pressure was cyclonic in and near the British Isles—primary systems of some depth passing eastwards across the North of Scotland, while numerous secondary systems brought rain and squalls to the southern half of the United Kingdom also. Owing to the amount of cloud and to the freshness of the S.W. to N.W. winds which prevailed, temperature never became very high and seldom exceeded 70° even in the S.E. and centre of England. On the Continent, when the barometer was higher and conditions were at times anticyclonic, much warmer weather was experienced—at least towards the close of the week. Thus on Thursday the thermometer rose in the shade to 82° in Paris and 88° in Berlin, while the maximum on this day in London was only 68°. At 8 a.m. of Friday temperature was as high as 72° at Stockholm. In Dublin the extremes of temperature for the week occurred on Saturday—the minimum being 50·0° and the maximum 68·9°. The mean height of the barometer in this city was 29·788 inches, pressure ranging from 30·031 inches at 9 p.m. of Monday (wind, N.N.W.) to 29·429 inches at 7·15 p.m. of Wednesday (wind, W.), from which low value it again increased to 30·037 inches at 9 p.m. of Saturday (wind, W.S.W.). The corrected mean temperature was 59·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 59·1°. The rainfall amounted to ·350 inch on five days—·161 inch being registered on Tuesday. The prevailing winds were westerly (S.W. and N.W.).

While changeable and far from settled, the weather was chiefly fine and dry in the period ended Saturday, the 29th. The general distribution of pressure was cyclonic in the North, anticyclonic in France and Germany, as well as in the British Islands on Thursday, the 27th, when an area of high pressure passed eastwards across Ireland to England. The fine, quiet weather accompanying this system was of short duration, and on Friday a fresh depression appeared off the N.W. of Scotland, causing clouds to increase and a shift of wind to S.W., from which point it freshened at some stations. Before the anticyclonic period thunderstorms occurred very generally over the midland, eastern, and southeastern parts of England on Wednesday, but the attendant rainfall was not large, In Manchester, however, ·810 inch fell. Showers fell in many places on the day named, and with the advent of northerly winds and a clearing sky temperature fell fast in the succeeding night. In Dublin the mean height of the barometer was 30·005 inches—pressure ranging between 29·747 inches at 9 p.m. of Monday (wind, W.) and 30·234 inches at 9 p.m. of Thursday (wind N.). The corrected mean temperature was 61·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 61·3°. On Sunday the thermometer rose to 74·5° in the screen; on Thursday it fell to 50·2° The rainfall amounted to ·063 inch, of which ·058 inch was measured on Saturday. The prevalent winds were between W. and N.

Sunday, the 30th, was bright and fair in Dublin, but heavy showers fell in Edinburgh and thunderstorms occurred along the east coast of England. Monday, the 31st, was changeable and showery in many places.

The rainfall in Dublin during the seven months ending July 31st amounted to 11·666 inches on 92 days, compared with 13·722 inches on 109 days during the corresponding period in 1892, 10·935 inches on 92 days in 1891, 15·587 inches on 118 days in 1890, 13·146 inches on 112 days in 1889, 15·994 inches on 109 days in 1888, 7·935 inches on 80 days in 1887, and a twenty-five years' average of 14·733 inches on 112·6 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in July was 1·290 inches on 15 days, compared with 2·925 inches on only 10 days in 1892, 1·325 inches on 18 days in 1891, and 1·489 inches, distributed over 18 days, in 1890. Of the total rainfall ·360 inch fell on the 9th and ·330 inch on the 13th. The total fall since January 1 has been 13·066 inches on 90 days, compared with 16·708 inches on 90 days in 1892.

At Cloneevin, Killiney, Co. Dublin, the rainfall in July was 1·36 inches on 17 days, compared with an eight years' average of 1·864 inches on 15 days. On the 13th the rainfall was ·26 inch. Since January 1, 1893, 11·05 inches of rain have fallen at this station (Cloneevin).

EXTRA REMARKS.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of August, 1893.

Mean Height of Barometer,	29·965 inches.
Maximal Height of Barometer (on 29th, at 9 a.m.),	30·396 ,,
Minimal Height of Barometer (on 21st, at 9 a.m.),	29·290 ,,
Mean Dry-bulb Temperature,	61·3°.
Mean Wet-bulb Temperature,	57·9°.
Mean Dew-point Temperature,	55·1°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·437 inch.
Mean Humidity,	80·4 per cent.
Highest Temperature in Shade (on 15th),	79·8°.
Lowest Temperature in Shade (on 26th),	47·9°.
Lowest Temperature on Grass (Radiation) (on 28th)	41·6°.
Mean Amount of Cloud,	54·0 per cent.
Rainfall (on 16 days),	2·713 inches.
Greatest Daily Rainfall (on 18th),	·516 inch.
General Directions of Wind,	S.W., N.W.

Remarks.

Although changeable, as in 1892, and forming no exception to the rule that August is characterised by heavy rains, this was a record month as regards high temperature. On no fewer than 14 days did the thermometer exceed 70° in the shade, and the mean temperature was one degree above that of August, 1871, when it reached 62°. The present month also is remarkable for the magnificent display of lightning which occurred on the evening and during the night of the 9th. The cyclonic depressions, which are periodic in the last week of August, arrived about a week earlier than usual, the barometer falling to 28·80 inches off the west coast of Scotland on the 21st.

In Dublin the arithmetical mean temperature (63·0°) was much above the average (59·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 61·3°. In the twenty-eight years ending with 1892, August was coldest in 1881 (M. T. = 57·0°), and warmest in 1871 (M. T. = 62·0°). In 1885, the M. T. was only 57·1°; in 1879 (the "cold year"), it was 57·7°; in 1887, 60·3°; in 1888, 58·2°; in 1889, 58·6°; in 1890, only 57·2°; in 1891, 58·1°, and in 1892, 60·0.°

The mean height of the barometer was 29·965 inches, or 0·068 inch above the corrected average value for August—namely, 29·897 inches. The mercury marked 30·396 inches at 9 a.m. of the 29th, and fell to 29·290 inches at 9 a.m. of the 21st. The observed range of atmospherical pressure was, therefore, 1·106 inches—that is, a little more than an inch and one-tenth.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 61·3°, or 3·7° above the value in August, 1888 and 1889, 5·0° above that in 1890, 4·1° above it in 1891, and 2·3° above it in 1892. It was also 0·8° above the value for July, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·47), the mean temperature was 62·6°, or 3·3° above the average mean temperature for August, calculated in the same way, in the twenty-five years, 1865–89, inclusive (59·3°). The arithmetical mean of the maximal and minimal readings was 63·0°, compared with a twenty-five years' average of 59·7°. On the 15th the thermometer in the screen rose to 79·8°—wind, light and variable; on the 26th the temperature fell to 47·9°—wind, N.W. The minimum on the grass was 41·6° on the 28th.

The rainfall was 2·713 inches, distributed over 16 days. The average rainfall for August in the twenty-five years, 1865–89, inclusive, was 2·825 inches, and the average number of rainy days was 15·5. The rainfall, therefore, was slightly below average, while the rainy days were slightly in excess of the average. In 1874 the rainfall in August was very large—4·946 inches on 18 days; and in 1868 also 4·745 inches fell on, however, only 13 days; but the heaviest downpour in August occurred in 1889, when 5·747 inches were registered on 22 days. On the other hand, in 1884, only ·777 inch was measured on 8 days. In 1887, 1·520 inches of rain fell on 16 days; in 1888 1·270 inches on 12 days; in 1890, 2·799 inches on 19 days; in 1891, 4·953 inches on 25 days, and in 1892, 3·557 inches on 22 days.

High winds were noted on as many as 10 days, and attained the force of a gale on three occasions—namely, the 4th, 20th, and 21st. A thunderstorm of great severity occurred on the 9th. Thunder was also heard on the 18th. Lightning was also seen on the 13th, 18th, and 23rd. Temperature reached 70° in the screen on as many as 14 days. Hail fell on the 18th. It was foggy on the 12th, 13th, and 14th.

The weather remained changeable and showery, with fresh westerly (S.W. to N.W.) winds, throughout the period ended Saturday, the 5th. A new disturbance reached our northwest coasts on Tuesday, the 1st, leading to rain without much wind. On Wednesday afternoon, however, the barometer fell briskly and the wind backed to S.W. and freshened with a threatening appearance as a much more decided depression approached the N.W. of Ireland from the Atlantic. This system was quickly followed by another on Thursday night, so that by Friday the weather was thoroughly broken, squally and showery, in all parts of the United Kingdom. On the afternoon of this day thunderstorms and heavy rains occurred in London and many other places. A brisk recovery of pressure now took place and the wind drew towards N. and moderated, with fine, dry weather on Saturday. In Dublin the mean height of the barometer for the week ended Saturday, the 5th, was 29·861 inches, pressure ranging between 29·534 inches at 9 a.m. of Friday (wind, W. by S.) and 30·068 inches at 9 p.m. of Saturday (wind, N.). The corrected mean temperature was 60·4°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 58·8°. The screened thermometers rose to 71·3° on Friday and fell to 52·4 on Tuesday. The rainfall was ·813 inch on five days, ·270 inch being measured on Wednesday. The prevailing wind was N.W. Changeable, but very warm and generally summerlike weather characterised the week ended Saturday, the 12th. On Wednesday and Thursday thunderstorms of quite exceptional intensity raged over many parts of England and Ireland, extending subsequently to parts of Scotland also. In Ireland, the distribution of atmospherical pressure was cyclonic, except on Tuesday and Saturday, when a continental anti-cyclone spread westwards as far as this country. As the general direction of the wind in the British Islands was southerly, temperature ranged very high—the thermometer rising to 85° or 86° at the inland English stations on Tuesday and Wednesday—even at Holyhead a maximum of 83° was reached on Wednesday. The highest in Paris on this same day was 91°. This tropical heat was the more remarkable, as the week commenced with very low temperatures, indeed, the minima recorded on Sunday morning were 46° in London and at Oxford, 44° at Leith, 43° at York, Loughborough, and Ardrossan; 42° at Sumburgh Head, 41° at Wick and Aberdeen, 40° at Stornoway, and 38° at Nairn! But the most striking phenomenon of the week was the violent thunderstorm of Wednesday night. In Dublin the lightning, which was almost incessant from dusk until after midnight, was extraordinarily vivid. The storm passed from S.S.E. to N.N.W. directly over the city between 10 and 11 p.m., in which time a quarter of an inch of rain fell. The mean height of the barometer was 29·951 inches, pressure ranging between 29·806 inches at 4 p.m. of Thursday (wind, S.E.) and 30·136 inches at 9 p.m. of Saturday (wind, S.). The corrected mean temperature was 65·5°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 63·8°. On Friday the screened thermometers rose to 77·7°, having fallen to 53·0° on Sunday. The rainfall was ·460 inch on four days, ·250 inch being recorded on Wednesday. The prevalent winds were S.W. and S.E.

Many years have passed since such really tropical heat has been experienced in Spain, France, and the British Isles, as that which has made the week ended Saturday, the 19th, memorable in meteorological annals. At Rochefort, on the west coast of France, the daily maxima were 102°, 106°, 91°, 93°, 100°, 90°, and 81°. In London the corresponding values were 81°, 85°, 87°, 90°, 92°, 93°, and 78°. On Thursday night the thermometer did not sink below 72° in London, and by 8 a.m. of Friday it had already risen to 84°. Even in Dublin a maximum of 79·8° was recorded on Tuesday, the 15th—this being the highest shade temperature registered in the Irish capital since July 16, 1876, when the phenomenal reading 87·2 was attained. On Tuesday the maximum at the Ordnance Survey Office, Phœnix Park, was 82·0°; at Glasnevin Botanic Gardens it was 80·6°. Only on the nights of Tuesday and Friday did the minimum fall below 60°. On every day the maximum exceeded 70°. There was an anticyclonic distribution of atmospherical pressure over western Germany, France, England, and Ireland until Thursday, when isobars became cyclonic and decided gradients for southerly winds formed over all parts of the United Kingdom. Thunderstorms of some severity occurred in the North of Ireland and the northern half of Great Britain on Tuesday night, while drenching showers of rain and hail fell in and about Dublin on Friday, accompanied by thunder. It is noteworthy that the weather was quite cool in Scandinavia throughout the week. In Dublin the mean height of the barometer was 29·965 inches, pressure ranging from 30·170 inches at 9 a.m. of Monday (wind, S.S.E.) to a minimum of 29·627 inches at 9 p.m. of Saturday (wind, S.). The corrected mean temperature was 67·9°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 66·6°. On Tuesday, the shade thermometers rose to 79·8°; on Saturday they fell to 58·1°. The rainfall was ·696 inch on two days ·516 inch falling in heavy showers on Friday, when some hail also fell. The prevailing wind was S.S.W. A good deal of fog hung about the coast on Sunday and Monday. The rainfall at Greystones, Co. Wicklow, was 1·035 inches on two days. The mean temperature of this week was 73·1° in London, 71·8° at Cambridge, 71·5° at Oxford and Loughborough, 70·5° at Southampton, 70·3° at Manchester, and 70·1° even at Scarborough on the sea.

Opening with typical cyclonic conditions and rough, rainy weather, the week ended Saturday, the 26th, closed with equally well-marked anticyclonic conditions and fine, quiet weather. On Sunday morning a large depression was found off the N.W. of Scotland. This system had caused a heavy rainfall during the previous night in most parts of Ireland and in some parts of Scotland. A few hours later a much more serious disturbance advanced towards the N.W. of Ireland from the S.W., causing a renewed and still heavier rainfall and moderate to fresh gales from S., S.W., and W. at several exposed stations. By 8 a.m. of Monday the barometer was down to 28·90 inches in Donegal, and by 6 p.m. a minimal reading of 28·83 inches was reached at Wick, in Caithnessshire. During the next three days the arrival of several shallow secondary depressions kept the weather in an unsettled, showery state. On Thursday, however, an area of high pressure began to spread over our southwestern districts and the N.W. of France, and this brought cool, dry N.W. winds and finer and brighter weather. Towards the close of the period the nights became very sharp, the thermometer in the screen falling on Friday night to 47·9° in Dublin; 46·0° in London, as well as at Wick, Belmullet, and Oxford; and 41·0° at Parsonstown. In Dublin the grass minimum was 41·7°. In Dublin the mean height of the barometer was 29·887 inches, pressure ranging from 29·290 inches at 9 a.m. of Monday (wind, W.S.W.) to 30·343 inches at 9 a.m. of Saturday (wind, N.W.). The corrected mean temperature was 59·6°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 57.9°. On Sunday the thermometer rose to 68·6°; on Saturday it fell to 47·9°. The mean temperature was 8·3° lower than that of the previous week. Rain was measured on four days to the amount of ·718 inch, ·390 inch being entered to Sunday. The prevailing winds were first S.W., then N.W.

The last five days of the month were uneventful but favourable. An anticyclone of considerable intensity for the time of year lay throughout over Ireland and the Atlantic to the westward of this country. The weather was at first bright and cool, with northerly winds; but the sky afterwards became densely clouded, and on Thursday, the 31st, some rain fell with a N.W. wind. Temperature showed some recovery on this the closing day of the month.

The rainfall in Dublin during the eight months ending August 31st amounted to 14·379 inches on 108 days, compared with 9·455 inches on 96 days during the same period in 1887, 17·264 inches on 121 days in 1888, 18·893 inches on 134 days in 1889, 18·386 inches on 137 days in 1890, 15·888 inches on 117 days in 1891, 17·279 inches on 131 days in 1892, and a twenty-five years' average of 17·558 inches on 128·1 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in August, 1893, was 3·275 inches distributed over 16 days. Of this quantity ·690 inch fell on the 19th. The total fall since January 1 amounts to 16·341 inches on 106 days, compared with 21·296 inches on 108 days in 1892.

7 8 9 10 11 12 13 14 15 16 17 18 19

79%

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of September, 1893.

Mean Height of Barometer,	29·848 inches.
Maximal Height of Barometer (on 12th, at 9 a.m.),	30·345 ,,
Minimal Height of Barometer (on 29th, at 9 a.m.),	29·052 ,,
Mean Dry-bulb Temperature,	54·8°.
Mean Wet-bulb Temperature,	51·8°.
Mean Dew-point Temperature,	48·9°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·350 inch.
Mean Humidity,	81·3 per cent.
Highest Temperature in Shade (on 5th),	72·0°.
Lowest Temperature in Shade (on 21st),	38·2°.
Lowest Temperature on Grass (Radiation) (on 24th)	31·7°.
Mean Amount of Cloud,	47·4 per cent.
Rainfall (on 14 days),	·729 inch.
Greatest Daily Rainfall (on 6th),	·174 inch.
General Directions of Wind,	N.W., W.

Remarks.

September, 1893, was favourable throughout. It was a month of average temperature, with fresh westerly and north-westerly winds, and frequent showers, but no heavy rains near Dublin. At times the nights were very sharp, and even frosty, but, on the other hand, much bright sunshine was enjoyed by day. Towards the close the autumnal tints in the foliage were lovely beyond compare.

In Dublin the arithmetical mean temperature (55·9°) was as nearly as possible equal to the average (55·8°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 54·8°. In the twenty-eight years ending with 1892, September was coldest in 1886 and in 1882 (M. T. = 53·0°), and warmest in 1865 (M. T. = 61·4°). In 1880, the M. T. was as high as 58·6°; in 1879 (the "cold year"), it was 54·3°; in 1887, 54·0°; in 1888, 54·4°; in 1889, 55·8°, or exactly the average; in 1890 it was as high as 59·6°; in 1891, it was 57·6°, and in 1892, 54·5°. So warm a September as that of 1890 had not occurred for a quarter of a century.

The mean height of the barometer was 29·848 inches, or 0·062 inch below the corrected average value for September—namely, 29·910 inches. The mercury rose to 30·345 inches at 9 a.m. of the 12th, and fell to 29·052 inches at 9 a.m. of the 29th. The observed range of atmospherical pressure was, therefore, 1·293 inches—that is, a little more than one inch and a quarter.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 54·8°, or as much as 6·5° below the value for August, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·476), the mean temperature was 55·5°, or exactly equal to the average mean temperature for September, calculated in the same way, in the twenty-five years, 1865–89, inclusive (55·5°). The arithmetical mean of the maximal and minimal readings was 55·9°, compared with a twenty-five years' average of 55·8°. On the 5th the thermometer in the screen rose to 72·0°—wind, S.S.W.; on the 21st the temperature fell to 38·2°—wind, N.W. The minimum on the grass was 31·7° on the 24th. On the 21st the grass minimum was 31·8°.

The rainfall was only ·729 inch, distributed over as many as 14 days—the rainfall was thus considerably below the average. The average rainfall for September in the twenty-five years, 1865–89, inclusive, was 2·176 inches, and the average number of rainy days was 14·7. In 1871 the rainfall in this month was very large—4·048 inches on, however, only 13 days. On the other hand, in 1865 only ·056 inch was measured on but 3 days. In 1888, the rainfall was only ·728 inch on 10 days; in 1889, 1·043 inches fell on 13 days; in 1890, 2·469 inches on 14 days; in 1891, 2·132 inches on 18 days; and in 1892, 2·631 inches on 19 days.

High winds were noted on as many as 14 days, but attained the force of a gale on no occasion in Dublin. An aurora appeared on the 1st. Lightning was seen on the 8th and 21st. Thunder was heared on the 21st. The atmosphere was foggy on the 3rd, 4th, and 12th.

The month opened with an anticyclone forming over Ireland, where the weather during the first two days was mild and fine, although rather cloudy. In England rain had fallen, and the weather was taking up. In Scotland conditions were still unsettled and rainy. North-westerly winds were prevalent in nearly all parts of the United Kingdom.

During the week ended Saturday, the 9th, the weather, which was at first fair and warm, afterwards became cloudy, showery, squally, and finally cold for the time of year. On Sunday morning an anticyclone lay right over the British Islands, in all parts of which the barometer was high and remarkably uniform, the morning readings varying not one-tenth of an inch, from 30·30 inches at Loughborough, in Leicestershire, to 30·22 inches at Belmullet, in Mayo, and 30·21 inches at Valentia Island in Kerry. The weather was fair and bright after a calm, dewy, and (in places) foggy morning. During the following two days the anticyclone retreated in a south-easterly direction to the Continent and the barometer fell steadily. The wind meanwhile became S.W. in the North, and E. or S.E. in the South, temperature rising considerably on Tuesday—to 72° in Dublin and at Leith, 74° at York and Hurst Castle, 75° at Oxford, and 77° in London, at Loughborough and Cambridge. Wednesday was still hotter in the midlands and south of England, the thermometer reaching 80° at Cambridge and 81° in London; but already a decided fall of temperature had begun in Scotland and Ireland, and was spreading south-eastwards with clouds, rain, and high westerly winds. On Friday a V.-shaped thunderstorm depression travelled south-eastwards across Great Britain, and in its rear temperature gave way still more rapidly, so that Saturday was quite a cool day. In Dublin the mean atmospheric pressure was 29·914 inches, pressure ranging between 30·275 inches at 9 a.m. of Sunday (wind E.N.E.), and 29·570 inches at 9 p.m. of Wednesday (wind W.S.W.). The corrected mean temperature was 58·5°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 57·3°. On Tuesday the screened thermometers rose to 72·0°, on Saturday they fell to 44·0°. Rain was registered on three days, the total measurement being ·252 inch, of which ·174 inch was recorded on Wednesday. Sheet lightning was seen on the eastern horizon on Friday evening. The prevalent winds were S.W. and N.N.W.

The two most striking features in the weather of the week ended Saturday, 16th, are the low night temperatures at the beginning and the continuous drought, except in the north and the extreme south of the British Islands. During Sunday and Monday a depression was passing south-eastwards from the mouth of St. George's Channel across the Bay of Biscay to the Peninsula. This disturbance caused heavy rains in the extreme S.W. of England, along the west coast of France, and finally in central Spain. Its presence was made evident from Dublin on Saturday, the 9th, as well as throughout Sunday, by a sheet of cirriform cloud which kept travelling in an upper current from W. to E. over the southern half of the sky. A strong easterly wind at the same time showed that an area of low barometer lay to the southward. As this breeze died down, the nights became very sharp in England and Ireland. At Parsonstown the screened thermometer fell to 36° on Monday night and to 31° on Tuesday night. At Loughborough also the minimum on Monday night was 31°, or one degree below freezing-point. Large depressions now began to pass eastward across Northern Europe, so that for the rest of the week squally westerly (S.W. to N.W.) winds, high but variable temperatures, and cloudy skies—with heavy rain in the extreme north—were experienced. At Glencarron, in Ross-shire, the rainfall of this week was as much as 6 inches. In Dublin the mean height of the barometer was 30·146 inches, readings varying from 30·345 inches at 9 a.m. of Tuesday (wind calm), to 29·923 inches at 9 p.m. of Saturday (wind N.W.). At 4 p.m. of this day a reading of 29·892 inches was recorded. The corrected mean temperature was 56·9°. The mean dry bulb readings in the screen at 9 a.m. and 9 p.m. were 57·1°. On Tuesday the minimum was 40·5°, on Friday the maximum was 70·0°. Light showers fell on Friday evening, yielding only ·008 inch of rain. The prevalent winds were E., W.S.W., and N.W.

All through the week ended Saturday, the 23rd, the atmosphere was in a disturbed state over north-western Europe, and cyclonic conditions prevailed generally. On Tuesday and the two following days a depression of the first magnitude lay between Scotland and Norway, while a series of secondary depressions travelled south-eastwards across the British Islands, keeping the weather in a changeable, squally, showery condition, especially on our northern and north-western coasts. The amount of atmospherical depression may be gauged by the fact that on Tuesday the barometer fell to 28·76 inches at Sumburgh Head, in the Shetlands. On Wednesday evening sheet lightning was seen from the shores of the Irish Sea, St. George's Channel, and the English Channel. At night sharp frost occurred over central Ireland and in some inland parts of England also. At 8 a.m. of Thursday a thunderstorm prevailed in the Scilly Isles, connected with a large secondary depression which at that time lay over Brittany. On the evening of this day massive cumuli and nimbi were seen from the east coast of Ireland passing southwards down the Irish Sea—vivid flashes of lightning shot from these clouds from time to time, and distant thunder was heard at intervals. On Friday night another secondary depression brought a considerable rainfall, followed by a renewed fall of temperature and fresh northerly winds on Saturday. On Friday and Saturday showers of snow and sleet fell in Scotland and over the north of England. In Dublin the mean height of the barometer was 29·612 inches, readings decreasing from 29·832 inches at 9 a.m. of Sunday (wind W.N.W) to 29·330 inches at 3 p.m. of Tuesday (wind also W.N.W.), but rising again intermittently to 29·877 inches at 9 p.m. of Saturday (wind N.W.). The corrected mean temperature was 50·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 50·2°. On Monday the thermometer rose to 63·8° in the shade; on Thursday it fell to 38·2° in the shade and to 31·9° on the grass. The rainfall was ·191 inch on four days—·112 inch being measured on Friday. The wind was generally N.W., varying only between W. and N.

A cyclonic distribution of atmospherical pressure over western and northern Europe caused the weather to be of a changeable, showery, and squally character throughout the week ended Saturday, the 30th. At the beginning, no doubt, an anticyclone was found over Ireland in the rear of a depression overlying the Skager Rack, but this high pressure area soon gave place to a new disturbance, which at 8 a.m. of Tuesday had its centre over Donegal, Derry, and Antrim. This system travelled eastwards, causing heavy rain, first in the north of Ireland, afterwards in the north of England. Indeed, on Wednesday thunderstorms occurred generally along the east coast of England and at the Helder, in connection with this depression. By 8 a.m. of Thursday a very decided reduction of pressure was in progress all over the British Islands and Scandinavia and a large and deep depression was approaching the N.W. of Scotland. The showers now became heavier and more frequent in nearly all places, while the wind blew more and more gustily and strongly from S.W. or W. At 8 a.m. of Friday the barometer was down to 28·65 inches at Stornoway in the Hebrides, where a fresh southerly gale was blowing. The reading was 30·00 inches at Nice and 30·06 inches at Lisbon at the same hour. Gales prevailed at many exposed stations—from S.E. in Norway, but from S.W. or W. in the English Channel, and at Pembroke. The showery weather continued to the close of the week; but fine, bright intervals were enjoyed. In Dublin the mean height of the barometer was 29·619 inches, the range of pressure being from 30·079 inches at 9 a.m. of Sunday (wind, W.N.W.) to 29·052 inches at 9 a.m. of Friday (wind, W.S.W). The corrected mean temperature was 54·2°. The mean daily dry bulb reading at 9 a.m. and 9 p.m. was 53·1°. On Sunday the thermometer fell to 38·9° in the shade; on Thursday it rose to 63·5°. Rain fell in measurable quantity on six days, the total precipitation being ·278 inch, of which ·050 inch was referred to Thursday. The prevailing winds were westerly (W.N.W. to S.W.). Lunar rainbows were seen at Greystones, Co. Wicklow, on Thursday evening. Thunder and lightning occurred in many parts of Ireland in the course of the same night.

The rainfall in Dublin during the nine months ending September 30th amounted to 15·108 inches on 122 days, compared with 10·968 inches on 112 days during the same period in 1887, 17·992 inches on 131 days in 1888, 19·936 inches on 147 days in 1889, 20·855 inches on 155 days in 1890, 18·020 inches on 135 days in 1891, 19·910 inches on 152 days in 1892, and a twenty-five years' average of 19·734 inches on 142 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in Septemb 1893, was ·750 inch distributed over 12 days. Of this quantity ·1 inch fell on the 25th, and ·140 inch on the 6th. At that station rainfall since January 1, 1893, has been 17·091 inches on 118 days, c pared with 23·883 inches on 125 days in the same nine months of 18

At Cloneevin, Killiney, Co. Dublin, the rainfall in August, 1893, 2·39 inches on 20 days (the maximal fall in 24 hours being ·37 inch on 20th), compared with an eight years' average of 2·845 inches on 1 days. In September, 1893, only ·46 inch fell at Cloneevin on 11 d The maximal fall in 24 hours was ·14 inch on the 6th. On an ave of eight years the September rainfall at this station has been 1·767 i on 12·5 days. Since January 1, 1893, 13·90 inches of rain have f at Cloneevin.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of October, 1893.

Mean Height of Barometer,	29·855 inches.
Maximal Height of Barometer (on 23rd, at 9 a.m.),	30·507 ,,
Minimal Height of Barometer (on 4th, at 9 a.m.),	29·061 ,,
Mean Dry-bulb Temperature,	48·8°.
Mean Wet-bulb Temperature,	46·5°.
Mean Dew-point Temperature,	44·0°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·293 inch.
Mean Humidity,	84·2 per cent.
Highest Temperature in Shade (on 21st),	67·7°.
Lowest Temperature in Shade (on 31st),	31·7°.
Lowest Temperature on Grass (Radiation) (on 31st)	24·9°.
Mean Amount of Cloud,	51·0 per cent.
Rainfall (on 16 days),	1·033 inch.
Greatest Daily Rainfall (on 14th),	·322 inch.
General Directions of Wind	W., S.W.

Remarks.

A favourable month of average mean temperature and atmospheric pressure. There was an overwhelming prevalence of westerly and south-westerly winds, which kept the rainfall far below the average on the leeward side of the Dublin and Wicklow mountains—Thus, it was only ·710 inch at both Greystones and Killiney; 1·033 inches in Dublin city; 1·140 inches at the Royal Botanic Gardens, Glasnevin; and 1·190 inches at the Ordnance Survey Office, Phœnix Park. Free of the mountains inland, the rainfall was much heavier. Even in London, not less than 3·900 inches of rain fell during the month. On the 20th and 21st there was a remarkable wave of heat. On the 30th and 31st the cold was equally decided.

In Dublin the arithmetical mean temperature (50·0°) was slightly above the average (49·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 48·8°. In the twenty-eight years ending with 1892, October was coldest in 1892 (M. T. = 44·8°), in 1880 (M. T. = 45·4°), and in 1885 (M. T. = 45·5°), and warmest in 1876 (M. T. = 53·1°). In 1886, the M. T. was as high as 52·0°; in 1879 (the "cold year"), it was 49·7°; in 1887, it was as low as 47·3°; in 1888, it was 49·1°; in 1889, it was only 48·1°; in 1890, it was 51·7°, and in 1891, 49·5°. October, 1892, beat the record for coldness, but October, 1893, has proved of normal warmth.

The mean height of the barometer was 29·855 inches, or 0·015 inch above the corrected average value for October—namely, 29·840 inches. The mercury rose to 30·507 inches at 9 a.m. of the 23rd, and fell to 29·061 inches at 9 a.m. of the 4th. The observed range of atmospherical pressure was, therefore, as much as 1·446 inches—that is, a little less than an inch and a half.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 48·8°, or 6·0° below the value for September. The arithmetical mean of the maximal and minimal readings was 50·0°, compared with a twenty-five years' average of 49·7°. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·485), the value was 49·8°, or 0·3° above the average mean temperature for October, calculated in the same way, in the twenty-five years, 1865–89, inclusive (49·5°). On the 21st, the thermometer in the screen rose to 67·7°—wind, S.W.; on the 31st the temperature fell to 31·7°—wind, N.W. The minimum on the grass was 24·9°, also on the 31st. On one night the thermometer sank below 32° in the screen, and on eight nights frost occurred on the grass. The corresponding figures in 1892 were 4 and 13 nights respectively.

The rainfall was only 1·033 inch, distributed over 10 days—the rainfall was considerably, while the rainy days were slightly, below the average. The average rainfall for October in the twenty-five years, 1865–89, inclusive, was 3·106 inches, and the average number of rainy days was 17·6. In 1880 the rainfall in October was very large—7·358 inches on 15 days. In 1875, also 7·049 inches fell on 26 days. On the other hand, in 1890, only ·639 inch fell on but 11 days, in 1884 only ·834 inch on but 14 days; and in 1868 only ·856 inch on 15 days. In 1888, the rainfall was 1·227 inches on 16 days, and in 1889 no less than 4·853 inches fell on 22 days. In 1891, 3·590 inches fell on 13 days; and in 1892, 2·535 inches on 17 days. From these figures it will be seen that October, 1890, proved the driest on record for more than a quarter of a century at least, while the rainfall in October, 1893, was only *one-third* of the average.

A lunar corona was seen on the 24th. There was an aurora borealis on the evening of the 29th. High winds were noted on 9 days, and attained the force of a gale on two occasion—the 25th and 28th. The atmosphere was more or less foggy in Dublin on the 7th, 18th, and 20th. Lightning was seen on the evenings of the 3rd, 4th, 5th, and 30th. Hail fell on the 26th.

The week ended Saturday, the 7th, proved to be one of low atmospherical pressure, low temperature, and changeable showery weather, the showers being from time to time accompanied by thunder and lightning in many places. The most important reduction of pressure occurred on Tuesday and Wednesday—at 8 a.m. of the latter day the barometer was below 29 inches throughout a large triangular area covering two-thirds of Scotland, the north of England, and the north-eastern third of Ireland. Gradients were nowhere steep, and so the winds—although varying much in direction—were not strong except off the south of Ireland and in the English Channel. Connected with this large primary cyclonic system, were a number of shallow secondary depressions, which caused thunder and hail—as well as rain—showers as they passed across the country. Temperature was not so low in the S. and S.E. of England as in other parts of the kingdom, and on Sunda the thermometer rose to 67° at Loughborough and Cambridge, 66° London and at Dungeness, and 65° at Hurst Castle. On the other han a minimum of 28° was registered at Nairn, in Scotland, on Wednes morning. In Dublin the mean height of the barometer was 29·: inches, pressure being observed to vary between 29·624 inches, at 9 p of Sunday, (wind W.) and 29·061 inches, at 9 a.m. of Wedne (wind also W.). The corrected mean temperature was 49·3°. mean dry bulb temperature at 9 a.m. and 9 p.m. was 47·2°. On Su the thermometer rose to 59·2°, on Saturday it fell to 37·9° in the sc The rainfall was ·168 inch on five days, ·051 inch being measure Wednesday. Lightning was seen on the evenings of Tuesday, We day and Thursday. The prevailing wind was westerly. The we was much more broken in England than in Ireland during the week

Atmospherical pressure was unsteady during the week ended Satu the 14th, and therefore the weather was unsettled and changeable. Friday, when a very warm, moist south-westerly, or equatorial cu began to pass over Ireland, the air was cold and rather dry in this co In England, on the contrary, heavy falls of rain took place, accomp by thunder and lightning and at times by strong and squally S.W. v In London, from one inch to an inch and a quarter of rain fell on M night, and the total fall for the three days ending 8 a.m. of Thursda no less than 1·84 inches. These heavy rains were due to the passa the English Channel of two depressions in quick succession—on Monday, the other on Wednesday. At this time, although the baron was rather low, bright, sharp weather prevailed in Ireland, showers o ing at intervals. On Thursday an area of high pressure passed over country. The weather turned colder and became fine and dry in Engl while in Ireland a warm S.W. wind arrived on Friday, causing dull, r weather, and an increase of temperature amounting to from 20° to Fahr. The result in Dublin was that on Saturday the interior of n houses became dripping wet, from the condensation as dew of the va of the warm air current upon the walls, ceilings, and floors, chilled the previous cold weather and remaining below the point of saturatio the dew point. Rain fell heavily on Saturday afternoon. In Dublin mean height of the barometer was 29·846 inches, pressure ranging l tween 29·683 inches at 9 a.m. of Sunday (wind W.), and 30·160 inch at 9 p.m. of Thursday (wind W.N.W.). The corrected mean tempera ture was 48·8°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was also 48·8°. On Tuesday the thermometers in the screen fell to 37·1°, on Saturday they rose to 65·0°. The rainfall was ·431 inch on three days, ·322 inch being measured on Saturday. The prevalent winds were W. and S.W.

Taken as a whole, the weather of the week ended Saturday, the 21st, was distinctly favourable and of a mild type—indeed, both at the beginning and at the end temperature was much above normal, although the minima were low on Tuesday night in Scotland and parts of both England and Ireland, and on Wednesday and Thursday nights in central England. On the other hand, Friday night proved abnormally warm in many places, and in Dublin the thermometer actually rose to 67·7° (nearly 68°) in the screen. Comparatively little rain fell, except in the south of Ireland and over the south and east of England as well as in parts of the English Midlands on Tuesday, when a shallow depression travelled in a direction from W.N.W. to E.S.E. from the mouth of St. George's Channel across the S.W. of England to the N.E. of France. This rain-system caused falls of 1·25 inches at Roche's Point, 1·57 inches at Hurst Castle, where a storm of thunder and lightning occurred at 1 30 a.m. of Wednesday, and ·75 inch in London. The rainfall was ·67 inch at Parsonstown, but only ·07 inch in Dublin. As this disturbance passed off, an anticyclone formed in the S., and the barometer rose to 30·40 inches or slightly more on Friday morning over the S. of England, N. of France, and centre of Germany. Along the north-western face of this anticyclone a very warm south-westerly current spread over Ireland on Friday, the temperature becoming singularly high at night. Saturday was first fine and warm, afterwards rainy and much cooler. In Dublin the mean height of the barometer was 30·099 inches, pressure ranging between a minimum of 29·762 inches at 9 p.m. of Sunday (wind W.S.W.) and 30·370 inches at 9 a.m. of Thursday (wind S.W.). The corrected mean temperature was 55·4°. The mean dry bulb reading at 9 a.m. and 9 p.m. was 54·5°. On Saturday the thermometers in the screen rose to 67·7°; on Wednesday they fell to 41·0°. The rainfall was ·238 inch on four days, ·098 inch being measured on Saturday. The prevailing winds were W. and S.W. A wet fog prevailed on Wednesday morning, and there was a smoke fog on Friday.

At first fine and dry, except in the S. and S.E. of England, where Sunday was dull and rainy, the weather afterwards became squally, showery, and generally changeable during the week ended Saturday the 28th. In the earlier period, an anticyclone lay over the S. of Ireland, the barometer rising on Monday morning to 30·55 inches at Valentia Island and Roche's Point, 30·52 inches at Parsonstown, and 30·51 inches in Dublin. This high pressure system soon moved away south-eastwards, and at the same time decreased in size. Simultaneously, a general reduction of atmospheric pressure took place in the N. and N.W., causing steeper gradients for westerly winds—that is, winds between S.W. and N.W., and showery, unsettled weather. On Tuesday and Wednesday rain fell heavily over the N. of Ireland and S. of Scotland, and in smaller quantities over the greater part of the kingdom. Hail fell in many places and lightning was seen at Belmullet on Wednesday night. On Thursday evening the moon shone with unusual lustre. A decided rise of temperature occurred on Friday, while Saturday was stormy with frequent showers, and, at times, rainbows. In Dublin the Mean height of the barometer was 30·038 inches, pressure rising to 30·507 inches at 9 a.m. of Monday (wind W.) and falling to 29·638 inches at 4 p.m. of Saturday (wind W.). The corrected mean temperature was 49·6°. The mean of the dry bulb readings at 9 a.m. and 9 p.m. was 49·2°. On Wednesday the thermometer rose to 59·8° in the screen; on Friday, it fell to 38·2°. The rainfall was ·184 inch on three days—·109 inch being registered on Wednesday and ·041 inch on Saturday. The prevailing wind was westerly.

The last three days were cool and fair in Ireland—an aurora borealis with carmine streamers was seen about 6 p.m. of Sunday, the 29th, and there was sheet lightning on the evening of the 30th. Sharp frost occurred on the 31st.

The rainfall in Dublin during the ten months ending October 31st amounted to 16·141 inches on 138 days, compared with 12·366 inches on 123 days during the same period in 1887, 19·219 inches on 147 days in 1888, 24·789 inches on 169 days in 1889, 21·494 inches on 162 days in 1890, 21·610 inches on 148 days in 1891, 22·445 inches on 167 days in 1892, and a twenty-five years' average of 22·840 inches on 160·4 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in October amounted to only ·710 inch on 15 days. Of this quantity ·225 inch fell on the 17th. The rainfall at Greystones in October, 1889, was no less than 6·935 inches on 22 days, or more than 11 times as great as the fall in October, 1890, when only ·600 inch fell on 13 days. In 1891, 5·122 inches fell on 14 days, and in 1892, 3·340 inches on 15 days. From January 1st, 1893, up to October 31st, rain fell at Knockdolian on 133 days to the total amount of 17·801 inches. In 1892, the rainfall of the corresponding ten months was 27·223 inches on 140 days.

At Cloneevin, Killiney, Co. Dublin, the rainfall in October, was ·710 inches on 14 days, compared with 3·040 inches on 17 days in 1892, and an eight years' average of 3·201 inches on 16 days. Since January 1, 1893, 14·61 inches of rain have fallen at this station, compared with an average of 20·353 inches in the previous eight years.

40	838·0	232	NW. N. NE.	3·0	4%	—	—	—	—	14 days.	—	—

7 8 9 10 11 12 13 14 15 16 17 18 19

GENERAL REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of November, 1893.

Mean Height of Barometer,	30·058 inches.
Maximal Height of Barometer (on 21st, at noon),	30·594 ,,
Minimal Height of Barometer (on 16th, at midnight),	28·719 ,,
Mean Dry-bulb Temperature,	43·3°.
Mean Wet-bulb Temperature,	41·0°.
Mean Dew-point Temperature,	38·1°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·234 inch.
Mean Humidity,	82·7 per cent.
Highest Temperature in Shade (on 3rd),	57·6°.
Lowest Temperature in Shade (on 7th),	30·8°.
Lowest Temperature on Grass (Radiation) (on 7th)	23·9°.
Mean Amount of Cloud,	73·2 per cent.
Rainfall (on 17 days),	1·870 inches.
Greatest Daily Rainfall (on 16th),	·821 inch.
General Directions of Wind	N.W., N. & N.E.

Remarks.

This was a generally favourable month. Its leading characteristics were—a prevalence of *northerly* winds, a tolerably low mean temperature, an absence of *calm* and fog, a moderate rainfall, but a high percentage of cloud.

The *memorable storm* of the period from the 16th to the 19th inclusive deserves special mention. The cyclonic depression which caused it was of great intensity, the barometer falling in its centre to about 28·5 inches on the morning of the 17th, and the sytem pursued a very erratic course, travelling in the first instance from S.S.W. to N.N.E., across Ireland and Scotland to the Moray Firth, and then "turning tail" and passing in a south-easterly direction down the east coast of Great Britain to the Continent, over which it finally dispersed. The wind-velocity during the northerly gales of this depression was great everywhere, but it was altogether exceptional at Holyhead, where the anemometer registered more than 1,800 miles of wind in 24 hours, and, in the one hour, upwards of 85 miles were recorded.

A slight shock of earthquake was felt at Greystones, Co. Wicklow, at 5 35 p.m. of the 2nd.

In Dublin the arithmetical mean temperature (43·8°) was decidedly below the average (44·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 43·3°. In the *twenty-eight* years ending with 1892, November was coldest in 1878 (M. T. = 38·2°), and in 1870 (M. T. = 42·2°), and warmest in 1881 (M. T. = 50·3°). In 1886, the M. T. was as high as 46·4°; in the year 1879 (the "cold year"), it was 43·9°; in 1887, it was as low as 42·6°; in 1888, it was as high as 47·5°; in 1889, it was 46·4°; in 1890, 45·3°; in 1891, 43·4°, and in 1892, as high as 46·9°.

The mean height of the barometer was 30·058 inches, or 0·198 inch above the corrected average value for November—namely, 29·860 inches The mercury rose to 30·594 inches at noon of the 21st, having fallen to 28·719 inches at midnight of the 16th. The observed range of atmospherical pressure was, therefore, 1·875 inches—that is, slightly less than one inch and nine-tenths.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 43·3°, or 5·5° below the value for October, and 11·5° below that for September, 1893. The arithmetical mean of the maximal and minimal readings was 43·8°, compared with a twenty-five years' average of 44·7°. On the 3rd, the thermometer in the screen rose to 57·6°—wind, W.S.W.; on the 7th the temperature fell to 30·8°—wind, calm. The minimum on the grass was 23·9°, also on the 7th.

The rainfall was 1·870 inches, distributed over 17 days—the rainfall was considerably below, while the rainy days were exactly equal to, the average. The average rainfall for November in the twenty-five years, 1865–89, inclusive, was 2·452 inches, and the average number of rainy days was 17·0. In 1876 the rainfall in November was large—3·614 inches on 20 days. In 1872, also 3·414 inches fell on 24 days; in 1887, 3·012 inches fell on 18 days; in 1888, 6·549 inches fell on 26 days; in 1890, 4·212 inches fell on no less than 27 days; in 1891, 2·911 inches fell on 15 days, and in 1892, 2·404 inches on 19 days. On the other hand, the rainfall in 1889 was only ·929 inch on 9 days; in 1870, only 1·218 inches were measured on but 11 days; and in 1879 only 1·251 inches on but 10 days.

High winds were noted on 15 days, but attained the force of a gale on only four occasions—the 16th, 17th, 18th and 29th. The atmosphere was more or less foggy in Dublin on the 4th, 7th, 13th, 14th and 30th.

A lunar halo was seen on the 21st. Snow or sleet fell on the 6th, 18th, 19th, and 23rd; hail on the 6th, 7th, 19th, 22nd and 23rd.

With the coming of November, as in 1892, so in 1893, cold frosty weather gave place to comparative warmth and south-westerly winds. A severe frost had visited central England early on Tuesday evening, October 31, but in the course of the following night temperature rose with extreme rapidity, so that Parsonstown was 21° warmer at 8 a.m. on Wednesday, the 1st, than it had been 24 hours previously. On Thursday a secondary V.-shaped depression crossed England from W. to E., causing a copious rainfall. Friday was a cloudy, mild, breezy day, but on Saturday a shift of wind to N. E. took place, and the air became drier and colder.

During the week ended Saturday, the 11th, showery, cloudy, and generally changeable weather, with north-easterly winds, prevailed. After Sunday an anticyclone was constantly found to the northwestward of the British Islands, while atmospherical pressure was relatively low both over the Baltic and over the Mediterranean Basin. At first areas of particularly sharp cold were found over the central districts of both England and Ireland—at 8 a.m. of Sunday the thermometer was as low as 22° at Loughborough and 25° at Cambridge and Parsonstown. At the first-named station it had been down to 19° during the previous night. In Dublin this day was fine, dry, and cold, but on Monday morning heavy showers of hail, sleet, and snow came up on a N.E. wind. In the neighbourhood of Stillorgan, Co. Dublin, some three inches of snow lay on the ground to an advanced hour in the forenoon. The frost continued inland, where also the weather remained dry. As usual in N.E. winds, the weather was most severe and broken in the extreme S.E. of England, where thunder and lightning accompanied sharp showers of cold rain and hail on Monday and Tuesday. After Wednesday temperature recovered, although the N.E. wind even freshened, and Saturday proved the mildest day of the whole week. In Dublin the mean height of the barometer was 30·344 inches, pressure ranging from 29·961 inches at 9 a.m. of Sunday (wind, W.N.W.) to 30·465 inches at 9 a.m. of Wednesday (wind, N.N.E.). The corrected mean temperature was 42·8° The mean dry bulb temperature at 9 a.m. and 9 p.m. was 42·3°. On Tuesday the minimum was 30·8°, on Saturday the maximum was 50·7° Rain fell on five days in frequent but not heavy showers, the maximum fall in 24 hours being ·049 inch on Wednesday, and the total fall amounting to ·162 inch. Hail, sleet, and snow fell on Monday morning.

The weather during the week ended Saturday, the 18th, was at first anticyclonic, quiet, and fair, but it afterwards fell into a most unsettled stormy condition, severe gales from opposite quarters blowing on the last three days of the week. At the beginning an anticyclone lay over the British Islands, the North Sea, Holland, and North Germany—the barometer slightly exceeded 30·50 inches in the N.E. of Scotland. On Monday beautiful weather prevailed, but already a depression was advancing northwards across Spain and the Bay of Biscay. This system finally passed up the English Channel on Tuesday, and caused heavy rain both in France and in the S. and S.E. of England—·720 inch of rain fell in London, while Dublin got only ·009 inch in the form of a drizzle on Tuesday evening. Wednesday proved fine and dry, but at night the wind veered from E. to S.E., and freshened in front of a very deep depression, which on Thursday night passed directly over Ireland, travelling in a north-north-easterly direction. This disturbance brought a heavy rainfall to the Irish and Scotch stations—·821 inch fell in Dublin up to 9 a.m. of Friday, the heaviest fall in this city since July 12, when ·871 inch fell in two thunderstorms. About midnight on Thursday the barometer read 28·719 inches, the lowest reading recorded in Dublin since October 13, 1891, when the mercury fell to 28·251 inches. In front of the cyclonic centre a fresh S.E. gale and high temperature prevailed; in its rear came a violent N. storm and bitter cold on Saturday, when also the depression changed its course and travelled southwards down the North Sea. In Dublin the mean height of the barometer was 29·740 inches, pressure ranging between 30·382 inches at 9 a.m. of Sunday (wind, E.), and 28·719 inches at midnight of Thursday (wind, S.). The corrected mean temperature was 43·0°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 42·2°. On Friday the thermometers in the screen rose to 55·1°, having fallen to 34·4° on Tuesday. The rainfall amounted to ·954 inch on three days—·821 inch being registered on Thursday. Snow showers fell on Saturday afternoon. The prevailing winds were E.S.E. and N.W. At Holyhead a gale from N. of hurricane force was reported on Saturday morning.

Changeable and unsettled weather held during the week ended Saturday, the 25th. At first, bitter northerly gales and showers of snow and hail prevailed in connection with the deep depression which had travelled northwards and then southwards across the British Islands in the closing days of the previous week. As the centre of this disturbance reached the Continent on Sunday morning, the barometer rose with great rapidity over the United Kingdom, so that gradients for northerly winds became excessively steep. The result was a disastrous northerly gale, which strewed the coasts of North-western Europe with wrecks and wreckage. The rise of the barometer continued until Tuesday morning, when the reading was 30·63 inches at Belmullet. Depressions then began to pass eastwards over Northern Europe, with their secondaries spreading south-eastwards over the British Islands, where showers of hail, sleet, or snow again fell plentifully at exposed stations. During Friday and Saturday a deep depression passed more directly over our area, causing mild, damp, squally weather and a general fall of rain. The week closed with a finer and clearer state of the atmosphere. In Dublin the mean height of the barometer was 30·212 inches, pressure ranging from 30·594 inches at noon on Tuesday (wind, N.) to 29·457 inches at 9 p.m. of Saturday (wind, W.N.W.). The corrected mean temperature was 41·1°, which was also the value of the mean dry bulb readings at 9 a.m. and 9 p.m. On Thursday the screened thermometers fell to 31·7°, on Saturday they rose to 52·9°. Rain fell in registrable quantity on four days to the total amount of ·214 inch, ·162 inch being measured on Saturday. Snow and hail fell on Sunday and Thursday, hail on Wednesday also. The prevailing winds were N.E. and N.W.

The period from Sunday, the 26th, to Thursday, the 30th, inclusive, was chiefly remarkable for the sudden and extreme changes of temperature which occurred at its beginning and close. On the 26th, the thermometer stood low under the influence of a fresh northerly wind, forming part of the circulation round a depression whose centre had advanced from the N. of Scotland to Denmark by 8 a.m. Monday, the 27th, brought milder, damper weather and freshening westerly winds. The next two days were warm, but blustering, with a good deal of cloud, and squally W.S.W. winds. Rain fell at exposed stations, most heavily in Scotland. In the course of the night of the 29th–30th rain set in afresh, and the wind shifted to the northward, in the rere of a series of V.-shaped depressions, which subsequently travelled towards S.E. across North-western Europe. A rapid fall of temperature followed, beginning in the far N., and quickly extending southwards. In Dublin the mean height of the barometer during this closing period of the month was 30·054 inches, pressure varying from 30·289 inches at 9 a.m. of Monday (wind, W.) to 29·829 inches at 9 p.m. of Thursday (wind, N.N.W.). The corrected mean temperature of the 5 days was 47·6°, the mean dry bulb temperature at 9 a.m. and 9 p.m. being 46·2°. On Sunday, the screened thermometer fell to 36·9°; on Tuesday it rose to 56·7°. Rain fell on the 29th to the amount of ·144 inch; on the 30th, to the amount of ·143 inch; total precipitation, ·287 inch. The prevalent winds were N.N.W. and W.S.W.

The rainfall in Dublin during the eleven months ending November 30th amounted to 18·011 inches on 155 days, compared with 15·378 inches on 141 days during the same period in 1887, 25·768 inches on 173 days in 1888, 25·718 inches on 178 days in 1889, 25·706 inches on 189 days in 1890, 24·521 inches on 163 days in 1891, 24·849 inches on 186 days in 1892, and a twenty-five years' average of 25·292 inches on 177·4 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in November, 1893, was 1·785 inches distributed over 17 days. Of this quantity ·320 of an inch fell on the 17th, and ·310 of an inch on the 30th.

From January 1st, 1893, up to November 30th, rain fell at Knockdolian, Greystones, on 150 days, and to the total amount of 19·586 inches.

At Cloneevin, Killiney, Co. Dublin, 1·40 inches of rain fell on 17 days, compared with an eight years' average of 3·048 inches on 18·25 days. The maximal fall in 24 hours was ·31 inch on the 16th. Since January 1st, 1893, 16·01 inches of rain have fallen at this station, compared with an eight years' average of 23·401 inches.

GENERAL REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of December, 1893.

Mean Height of Barometer,	29·868 inches.
Maximal Height of Barometer (on 30th, at 9 a.m.),	30·706 ,,
Minimal Height of Barometer (on 10th, at noon),	28·530 ,,
Mean Dry-bulb Temperature,	42·8°.
Mean Wet-bulb Temperature,	40·8°.
Mean Dew-point Temperature,	38·2°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·234 inch.
Mean Humidity,	84·6 per cent.
Highest Temperature in Shade (on 15th),	56·7°.
Lowest Temperature in Shade (on 2nd),	28·3°.
Lowest Temperature on Grass (Radiation) (on 2nd)	23·0°.
Mean Amount of Cloud,	57·3 per cent.
Rainfall (on 19 days),	2·482 inches.
Greatest Daily Rainfall (on 24th),	·499 inch.
General Directions of Wind,	S.W., W.

Remarks.

A generally open, rainy, squally month. The prevailing trend of the atmospheric depressions was from S W. to N.E. along the western shores of the British Isles and of Scandinavia. At the close of the month an anticyclone spread westwards from the Continent to the British Isles, and was accompanied by an abrupt fall of temperature, much cloud and fog. The rainfall of the whole month (2·482 inches) was above the average. Several serious gales were felt, but calms with fog prevailed during the closing days of the month.

In Dublin the arithmetical mean temperature (43·5°) was decidedly above the average (41·3°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 42·8°. In the twenty-eight years ending with 1892, December was coldest in 1878 (M. T. = 32·8°), and in 1874 (M. T. = 36·8°), and warmest in 1865 (M. T. = 46·2°). In 1886, the M. T. was as low as 37·9°; in the year 1879 (the "cold year"), it was also 37·9°. In 1887, the M.T. was 39·9°; in 1888, 43·6°; in 1889, 43·8°; in 1890, 39·2°; in 1891, 43·0°; and in 1892, 39·6°.

The mean height of the barometer was 29·868 inches, or 0·013 inch below the corrected average value for December—namely, 29·875 inches. The mercury rose to 30·706 inches at 9 a.m. of the 30th, and fell to 28·530 inches at noon of the 10th. The observed range of atmospheric pressure was, therefore, no less than 2·176 inches—that is, a little less than two inches and two-tenths.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 42·8°, or only 0·5° below the value for November, and 6·0° below that for October, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.* — *min.* × ·52), the value was 43·7°, or 2·2° above the average mean temperature for December, calculated in the same way, in the twenty-five years, 1865–89, inclusive (41·5°). The arithmetical mean of the maximal and minimal readings was 43·5°, compared with a twenty-five years' average of 41·3°. On the 15th, the thermometer in the screen rose to 56·7°—wind, S.W.; on the 2nd, the temperature fell to 28·3°—wind, W.N.W. The minimum on the grass was 23·0°, also on the 2nd. There were only 3 days of frost in the screen and 16 days of frost on the grass.

The rainfall was 2·482 inches, distributed over as many as 19 days. The average rainfall for December in the twenty-five years, 1865–89, was 2·404 inches, and the average number of rainy days was 16·9. The rainfall, therefore, and the rainy days were above the average. In 1876 the rainfall in December was very large—7·566 inches on 22 days. In 1872, 4·932 inches fell on as many as 24 days; and in 1868 (which was otherwise a fine and dry year), 4·749 inches fell on as many as 27 days. On the other hand, in 1867, only ·771 of an inch was measured on 13 days; and in 1871 the December rainfall was only ·797 of an inch on 15 days. In 1885, only ·742 of an inch of rain was measured on but 10 days; but in 1886 the rainfall was 3·348 inches, distributed over as many as 21 days. In 1887 (the "dry year"), the rainfall was 1·223 inches on 19 days; in 1888, 2·911 inches on 17 days; in 1889, 1·554 inches on 15 days; in 1890, 1·856 inches on 11 days; in 1891, 3·299 inches on 21 days; and in 1892, only ·795 inch on 10 days.

Lunar halos appeared on the 14th and 18th. High winds were noted on 17 days, and attained the force of a gale on 5 occasions—the 6th, 8th, 10th, 15th, and the 19th. The atmosphere was more or less foggy in Dublin on the 2nd, 17th, 27th, 28th, 29th, 30th, and 31st. Neither snow nor sleet fell in Dublin, although the mountains were covered with snow on the 18th and 20th. Hail fell on the 13th. Thunder and lightning occurred on the 8th.

Cold, bright weather prevailed during the first two days of the month, especially in Ireland, where an anticyclone of considerable intensity formed on Friday, the 1st, in the wake of two depressions which had passed south-eastwards across Western Europe immediately before. The frost in Scotland was very sharp on the morning of the 1st, and the wave of cold travelled southwards, so that at 8 a.m. of the 2nd the thermometer read only 17° at Loughborough.

As regards the week ended Saturday, the 9th, at first the weather was mild and damp in Ireland, rainy in Scotland, very frosty in the S. and S.E. of England. Thus, at 8 a.m. of Sunday the thermometer registered 49° at Belmullet, 48° at Stornoway, in the Hebrides, where 1·2 inches of rain had fallen in the previous 24 hours; but only 21 in London. An anticyclone, in which the barometer exceeded 30·5 inches, lay over the S.W. of Ireland; but a cyclonic system was skirting the north coast of Scotland. On Tuesday the barometer gave way quickly as a series of large and deep atmospheric depressions began to encroach on the shores of the North-West of Europe from the Atlantic. These, as is usual, brought unsettled weather, high but unsteady temperatures, gales and rains, to the greater part of the British Isles. On Thursday night a depression of exceptional magnitude rapidly passed northeastwards outside the north-west and north coasts of Ireland. The barometer fell to 28·27 inches at Malin Head on Friday morning, and to 27·97 inches at Stornoway at 4 p.m. of the same day. During the preceding night strong S.W. and W.S.W. gales, and thunder and hail showers prevailed at many stations, and these were renewed in the course of Friday afternoon. At Navan, Co. Meath, lumps of ice fell in a thunder-shower towards evening. At night lightning was seen on the N.W. horizon from Dublin. Saturday was a bright, cold day, and the week closed with a promise of frost, which, however, was not fulfilled. In Dublin the mean height of the barometer was 29·817 inches.. Pressure varied from 30·393 inches at 9 a.m. of Sunday (wind, W.) to 28·937 inches at 7.30 a.m. of Friday (wind, W.S.W.). The corrected mean temperature was 44·9°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 44·1°. On Sunday the screened thermometers sank to 33·7°, on Wednesday they rose to 53·1°. The rainfall amounted to ·352 inch on three days. The maximal fall in 24 hours was ·179 inch on Thursday. The prevalent winds were W.N.W. and W.S.W.

Atmospheric pressure and temperature were in a most unstable condition throughout the N. and W. of Europe and over the adjoining parts of the north Atlantic during the week ended Saturday, the 16th. Consequently, the weather was extremely unsettled, strong southerly and south-westerly gales prevailed, and heavy rainfalls occurred on all exposed coasts. On Sunday a very deep depression advanced northeastwards over Ireland. Strong S.E. to S.W. gales blew and heavy rain fell on the S. and E. coasts and over the Irish Sea during the forenoon. In Dublin the barometer fell to 28·530 inches about midday. During the next two days a number of *subsidiary* depressions crossed England, keeping the weather unsettled and showery. A thunderstorm occurred at Valentia Island on Monday night, and lightning was seen over the North Channel at the same time. Early on Wednesday morning a new and very deep depression was found over Central Ireland, where the barometer scarcely exceeded 28·5 inches (28·52 inches at Parsonstown, King's Co.). As pressure was at this time everywhere low, no serious gales followed, but rain fell abundantly in nearly all parts of the United Kingdom. A singularly rapid recovery of atmospheric pressure ensued, so that the Thursday morning readings exceeded those of Wednesday morning by 1·31 inches at Parsonstown, 1·29 inches in Dublin and at Valentia, and 1·22 inches at Roche's Point, Co. Cork. An anticyclone now formed over France, where temperature fell fast; but strong S.W. winds and gales, and high readings of the thermometer were reported from Ireland, Scotland, and many parts of England on both Friday and Saturday. In Dublin the mean atmospheric pressure was 29·537 inches, the barometer ranging between 28·568 inches at 9 a.m. of Wednesday (wind, S.W.), and 30·218 inches at 1 a.m. of Saturday (wind also S.W.). The corrected mean temperature was 43·6° the mean dry bulb readings at 9 a.m. and 9 p.m. were 43·1°. On Friday the screened thermometers rose to 56·7°, having fallen to 32·8° the previous day. The rainfall was ·862 inch on five days, ·460 inch being measured on Tuesday and ·351 inch on Sunday. The prevalent wind was S.W. Gales occurred from S.E on Sunday, and from S.W. on Friday.

Throughout the week ended Saturday, the 23rd, atmospheric pressure remained in a very disturbed condition, rain fell frequently—in Ireland and Scotland in particular—and blustering S.W. and W. winds or gales were very prevalent, especially from Tuesday to Friday inclusive. The barometer stood highest for the most part over the Peninsula and Central Europe, lowest off our extreme W. and N.W. coasts. Hence, the winds were strong from S.W. and W. Sunday was fine, bright, and mild, but rain fell at night. Monday was colder, and snow lay on the higher ranges of the Dublin Mountains. The barometer fell fast during the ensuing night, and the wind rose to a gale from S. At 8 a.m. of Tuesday the barometer was down to 28·80 inches at Belmullet, in Mayo. In the course of Tuesday night a still deeper secondary depression advanced to St. George's Channel from the S. W., the barometer reading only 28·60 inches at Pembroke and 28·64 inches at Roche's Point at 8

a.m. of Wednesday. This low pressure system brought with it gales and heavy rains—a strong S.W. gale being felt in the S. of England and a violent N.W. gale over the western parts of the English Channel. Hail fell in the W. and N. of Ireland and thunder occurred at Ardrossan. Thursday was a fine, bright day, but on Friday forenoon another rainfall occurred in Ireland. This was followed by a beautiful day, with which the week closed. In Dublin the mean height of the barometer was only 29·562 inches, pressure ranging between 30·166 inches at 9 a.m. of Sunday (wind, S. by W.) and 28·784 inches at 9 a.m. of Wednesday (wind, N.N E.). The corrected mean temperature was 44·0°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 43·0°. On Thursday the thermometers sank to 34·9°, on Friday they rose to 52·8°, in the screen. The prevailing direction of the wind was S.W. Rain fell on each day of the week to the total amount of ·683 inch, ·256 inch being measured on Tuesday.

The week ended Saturday, the 30th, witnessed the gradual substitution of anticyclonic for cyclonic conditions over the extreme West of Europe, and the consequent dying out of the strong, squally S.W. winds which had so long been blowing. It also saw the establishment of calms and fogs, as well as a general and decided fall of temperature towards the close of the period. At the beginning, depressions skirted the west coasts of Ireland and Scotland, and rain fell heavily in these countries and in smaller quantities over England. On Sunday a warm, bright morning was followed by a downpour of rain in Dublin, where the measurement was just half an inch. Christmas Day (Monday) was finer and cooler, but sharp showers fell shortly after midday in this city. A succession of mild, dull, damp days followed, and in London dense dark fogs prevailed on Wednesday and the next two days. By Saturday, however, an anticyclone of great size and intensity had been fully established over central and western Europe and the weather brightened and became much colder. At 8 a.m. of Friday the barometer stood at 30·79 inches over the North of Germany, and the thermometer was as low as 2° F. at Munich, having fallen there 29° in the previous twenty-four hours. On Friday evening the barometer rose to 30·86 inches in Berlin. Sharp frost held in Germany, France, and the centre of England on Saturday. In Dublin the mean height of the barometer was 30·319 inches, pressure ranging between 29·641 inches at 9 p.m. of Sunday (wind W.S.W.) and 30·706 inches at 9 a.m. of Saturday (wind S.). The corrected mean temperature was 46·4°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 45·4°. On Sunday the maximum in the shade was 55·8°; on Saturday the minimum was 35·9°. Rain fell on four days to the total amount of ·585 inch; ·499 inch being measured on Sunday. The prevailing winds were southwesterly.

Sunday, the 31st, was a raw, damp, very cold day in Dublin. In the morning a dense vapour-fog prevailed, and as the thermometer stood below freezing point thick rime was deposited on trees and shrubs. On this day the distribution of both atmospheric pressure and temperature over Western Europe was peculiar. An anticyclone had its centre over the southern half of Ireland, the barometer reading 30·63 inches at 8 a.m. at Parsonstown. A deep depression was at the same moment travelling eastwards across the north of Russia, the barometer being as low as 28·60 inches at Archangel. The thermometer at the hour named read 46° at Malin Head, but only 31° at Valentia Island in Kerry and 27° at Parsonstown. Dublin was 11° colder than Holyhead. At Nairn, in the N.E. of Scotland, the temperature was 49°, in Paris it was 18°, or 31° lower. On the Christiania Fjord it was 42°, at Biarritz 28°, and at

Munich 1°. Scilly was 20° warner than London (44° compared with 24°), and Stockholm was 9° warmer than Nice (37° against 28°).

The rainfall in Dublin during the year ending December 31st amounted to only 20·493 inches on 174 days, compared with 25·644 inches on 196 days in 1892, 27 820 inches on 184 days in 1891, 27·562 inches on 200 days in 1890, 27·272 inches on 193 days in 1889, 28·679 inches on 190 days in 1888, 16·601 inches on 160 days in 1887, and a 25 years' average of 27·696 inches on 194·3 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in December, 1893, was 2·940 inches, distributed over 20 days. Of this quantity ·540 inch fell on the 12th, and ·420 inch on the 20th.

From January 1st to December 31st, 1893, rain fell at Knockdolian, Greystones, on 170 days, and to the total amount of 22·526 inches.

At Cloneevin, Killiney, Co. Dublin, 2·04 inches of rain fell during December on 20 days. The maximal fall in 24 hours being ·29 inch on the 19th. The average rainfall for December at this station is 2·117 inches on 15 days.

From January 1st to December 31st, 1893, rain fell at Cloneevin, Killiney, on 176 days to the total amount of 18·05 inches.

Rainfall at Killiney, Co. Dublin, in 1893.

Mr. Robert O'Brien Furlong, M.A., Univ. Dubl., reports that rain fell in 1893, at his residence, Cloonevin, Killiney, Co. Dublin, on 176 days to the total amount of 18·05 inches. The average figures for eight years were 25·518 inches on 174·35 days. In 1887—the Jubilee year—the rainfall at this station was only 17·64 inches on but 148 days. In that year 1·05 inches fell on one day. The maximal fall on any one day in 1893 was only ·63 inch on April 16. Periods of absolute drought—14 days without rain—occurred from April 1 to 14 and from June 7 to 21. From March 19 to April 14 only ·02 inch fell.

Rainfall in 1893,

At 40 Fitzwilliam-square, West, Dublin.

Rain Gauge:—Diameter of funnel, 8 in. Height of top—Above ground 3 ft. 2 in.; above sea level, 50 ft.

Month	Total Depth	Greatest Fall in 24 Hours		Number of Days on which ·01 or more fell
	Inches	Depth	Date	
January,	2·239	·513	31st	19
February,	2·669	·480	9th	22
March	·288	·101	2nd	8
April,	1·046	·370	17th	7
May,	1·666	·720	20th	10
June,	1·716	·492	26th	12
July,	2·042	·871	12th	14
August,	2·713	·516	18th	16
September,	·729	·174	6th	14
October,	1·033	·322	14th	16
November,	1·870	·821	16th	17
December,	2·482	·499	24th	19
Total,	20·493	—	—	174

The rainfall was 7·203 inches in defect of the average annual measurement of the twenty-five years, 1865–89, inclusive—viz., 27·696 inches.

It will be remembered that the rainfall in 1887 was very exceptionally small—16·601 inches, the only approach to this measurement in Dublin being in 1870, when only 20·859 inches fell, in 1884, when the measurement was 20·467 inches, and in 1893 with its rainfall of 20·493 inches. In seven of the twenty-five years in question the rainfall was less than

26 inches, and in 1885 it was 26·614 inches.

The scanty rainfall in 1887 was in marked contrast to the abundant downpour in 1886, when 32·966 inches—or as nearly as possible double the fall of 1887—fell on 220 days. Only twice since these records commenced has the rainfall in Dublin exceeded that of 1886—namely, in 1872, when 35·566 inches fell on 238 days, and in 1880, when 34·512 inches were measured on, however, only 188 days.

In 1893, there were 174 rainy days, or days upon which not less than ·01 inch of rain (one hundredth of an inch) was measured. This was considerably in defect of the average number of rainy days, which was 194·3 in the twenty-five years, 1865–89, inclusive. In 1868—the warm dry year of recent times—as well as in 1887, the rainy days were only 160, and in 1870 they were only 145. In 1868, however, the rainfall amounted to 24·935 inches, or more than 8 inches above the measurement in 1887, and even in 1870, 20·859 inches were recorded.

The rainfall in 24 hours from 9 a.m. to 9 a.m. exceeded one inch on two occasions in 1892—viz., May 28th (2·056 inches) and August 16th (1·310 inches). On no occasion in 1893 did one inch of rain fall on a given day in Dublin, the maximal daily measurements were ·871 inch on July 12th, and ·821 inch on November 16th.

Included in the 174 rainy days in 1893 are 17 on which snow or sleet fell, and 21 on which there was hail. In January hail was observed on 4 days, in February on 6 days, in March on 2 days, in April, August and October on 1 day, in November on 5 days, and one day in December. Snow or sleet fell on 4 days in January, on 7 days in February, on 2 days in March, on 4 days in November, and on not one occasion in December. Thunder occurred on ten occasions during the year—three times in May, twice in July and August, and once in June, September, and December. Lightning was also seen on four occasions in October, twice in August and September, and once in February and December.

The rainfall was distributed as follows:—5·196 inches fell on 49 days in the first quarter, 4·428 inches on 29 days in the second, 5·484 inches on 44 days in the third, and 5·385 inches on 52 days in the fourth and last quarter.

The rainfall in the first six months was 9·624 inches on 78 days—that is, not one half of the year's record. In February the rainfall was 2·669 inches on 22 days, in August 2·713 inches fell on 16 days, and in December 2·482 inches on 19 days.

Of the 5·385 inches which fell in the fourth quarter of the year, only 1·033 inches were measured in October on 16 days, and 1·870 inches in November on 17 days. In December the rainfall was both considerable and frequent.

Aurora borealis was observed on three occasions—namely, on February 16th, September 1st, and October 29th. More or less fog prevailed on 38 occasions—4 in January, 3 in February, 8 in March, 2 in April, 3 in August, September, and October, respectively; 5 in November, and 7 in December. The March fogs were very dry. High winds were noted on 130 days—18 in January, 11 in February and March, respectively; 4 in April and May, respectively; 7 in June, 9 in July, 10 in August, 14 in September, 10 in October, 15 in November, and 17 in December. The high winds amounted to gales (force 7 or upwards according to the Beaufort scale) on 24 occasions—4 in January and February, respectively; 1 in March and June, respectively; 3 in August, 2 in October, 4 in November, and 5 in December.